

ANNUAL REPORT 2004



Faculty of Chemical and Food Technology
Slovak University of Technology

Radlinského 9, 812 37 Bratislava

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FOREWORD

The Faculty of Chemical and Food Technology (FCHPT) is one of six faculties of the Slovak University of Technology. The history of the Faculty dates back to 1939, when Law No. 188 of 25 July 1939 allowed the establishment of a Chemical Engineering branch at the Slovak University of Technology. The specialisation profile of the Faculty has developed steadily in accordance with the needs of the community.

The Slovak higher education has its rich history. Our Faculty follows in the footsteps of its famous predecessor in the education of technical chemistry, i.e., the famous Mining Academy in Banská Štiavnica constituted by empress Maria Theresa in 1762. The establishment of the Dr. M. R. Štefánik College of Technology in 1937 and subsequently, that of the Slovak College of Technology in 1939 succeeded in keeping the high standard of technical education in Slovakia.

Within the time of its existence, the Faculty has educated more than 16 700 graduates (more than 3 600 graduates in food engineering). The Faculty has trained nearly 1 300 graduates in postgraduate doctorate courses granting the title PhD in chemical and technical sciences. Thus, the Faculty has helped considerably to increase scientific knowledge in industry, education system, scientific and research institutes, and administrative services.

The Faculty occupies a very specific position within the Slovak Republic and relates to the whole spectrum of chemical, food, pharmaceutical and consumer industries, and ecology. At present, some 1300 students study at the Faculty and they are trained by qualified pedagogical and research staff.

The Faculty currently offers study in BSc courses, MSc courses, and PhD. The undergraduate form of study is organized at two levels: Bachelor-of-Science and Master-of-Science programmes. The first level BSc course for all students lasts three years, and is run in two branches: Chemical Technology and Food Technology. This first level of the study ends by a state examination and a project granting the student the title Bachelor of Science (BSc). The nominal span of the study in the BSc course is 3 years. The second level MSc course is run in 9 majors with several possible specializations over two years. The MSc course ends by a state examination and by defending a diploma thesis. The graduate obtains the title Master of Science (MSc). In addition to the natural-science basis, students of all branches study basic engineering subjects, e.g. Chemical Engineering, Processes Control, Basics of Chemical and Food Processing Technology, as well as subjects on Economy, Law and Ecology.

The highest form of university education is currently the doctorate study, which in the past was run as a form of preparation for scientific work. In 1997 the Ministry of Education of the Slovak Republic approved the right of the Faculty to train and to administer examinations in PhD Courses. The Faculty has conferred the title PhD in 16 branches of the doctoral study. (Chemical Physics, Inorganic Chemistry, Organic Chemistry, Analytical Chemistry, Physical Chemistry, Macromolecular Chemistry, Biochemistry, Microbiology, Inorganic Technology and Materials, Organic Technology and Technology of Fuels, Technology of Macromolecular Materials, Chemical Engineering and Control of Processes, Chemistry and Technology of Environment, Chemistry and Food Technology, Biotechnology, Applied Informatics).

The Faculty has a widely oriented programme, leading to the development of basic scientific fields in chemistry, chemical technology and food processing. This wide scientific orientation of Departments at the Faculty allows goal-oriented training of undergraduates and thereby their quicker transition to industry. There are several scientific schools at the Faculty which are successful at winning grants from domestic and international sources and at organising scientific meetings. The Faculty generally maintains an important international position. In addition to basic research, the Faculty participates in widely applied research for practice. The cooperation with many factories and companies allows for a swift application of research results in practice. At the same time the Faculty obtains considerable financial support.

The Faculty participates in issuing the specialized scientific journals: Chemical Papers, Fibres and Textile, Plastics and Rubber, Journal of Radioanalytical and Nuclear Chemistry, Biology, Folia Microbiologica, Vineyard and Wine, Nutrition and Health.

The scope and quality of the scientific activity keep the Faculty at a level, which is comparable with other top research and university centres in the world. This can be proved by the above mentioned number of grants, staff invitations to participate in conferences abroad, wide cooperation with foreign universities and institutions, and memberships in international organizations.

March 2005

Prof. Dušan Bakoš, PhD, DSc
Dean

DEPARTMENT OF ANALYTICAL CHEMISTRY

Head of Department:

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I. STAFF

Full Professors:

Dušan Bustín, PhD, DSc; Ján Krupčík, PhD, DSc; Ján Labuda, PhD, DSc; Jozef Lehotay, PhD, DSc; Eva Matisová, PhD, DSc; Ján Mocák, PhD, DSc;

Associate Professors:

Ernest Beinrohr, PhD; Eva Benická, PhD; Miroslav Čakrt, PhD; Drahomír Oktavec, PhD; Miroslav Rievaj, PhD; Jana Sádecká, PhD; Viktor Vrábel, PhD;

Assistant Professors :

Tatiana Buzinkaiová, PhD; Andrea Hercegová, PhD; Elena Korgová (till 31.5.2004), PhD; Pavol Májek, PhD; Alena Manová, PhD; Pavol Tarapčík, PhD; Mária Vaníčková, PhD;

Research Fellows:

Adriana Ferancová, PhD; Katarína Hroboňová, PhD; Svetlana Hrouzková, PhD; Tatiana Rojkovičová (since 1.12.2004 PhD); Ivan Skačáni, PhD; Ivan Špánik, PhD; Peter Tomčík, PhD;

PhD Students:

Eva Blahová (till 30.9.2004); Zuzana Dovalovská (since 1.10.2004); Milena Dömötörövä; Andrea Fedurcová; Pavlína Jenčušová (since 1.10.2004); Gabriela Karasová; Michal Kirchner; Damián Meričko (since 1.10.2004); Janka Mydlová; Renáta Ovádeková (since 1.10.2004); Milan Střelec;

Technical staff:

Marta Benešová; Anna Chalupková (since 15.9.2004); Ľubica Zajacová; Juraj Žemlička (till 31.7.2004)

II. TEACHING AND RESEARCH LABORATORIES

A. Teaching laboratories:

Laboratory of capillary gas chromatography
Laboratory of high performance liquid chromatography
Laboratory of capillary isotachopheresis
Laboratory of electroanalytical methods
Laboratory of molecular spectrometry
Clean laboratory for trace analysis with atomic spectrometry (AAS, OES-ICP)
Laboratory of electrochemical pre-concentration for atomic spectroscopy
Laboratory of organic elemental analysis
Laboratory of fluorescence analysis
Laboratory of chemometry
Laboratory of bioanalytical chemistry

B. Research laboratories:

Laboratory of organic synthesis
Laboratory of capillary gas chromatography
Laboratory of high performance liquid chromatography
Laboratory of capillary isotachopheresis
Laboratory of electroanalytical methods
Laboratory of molecular spectrometry
Laboratory of atomic spectroscopy
Laboratory of organic elemental analysis
Laboratory of fluorescence analysis
Laboratory of chemometry
Laboratory of bioanalytical chemistry

III. TEACHING

A. Undergraduate Study:

1. semester (Bc)	Analytical Chemistry I	2/2/0/0	Beinrohr, Vrábel
	Laboratory Practice AC I	0/0/0/4	Hercegová
1. semester (Bc)	Analytical Chemistry II	2/2/0/0	Bustín, Čákrť
	Laboratory Practice AC II	0/0/0/4	Manová
	Testing and Quality Control	1/1/0/0	Čákrť
1. semester (Bc)	Semester Project	0/0/0/4	Rojkovičová
1. semester (Bc)	Analytical Chemistry of Complex Inorganic Mixtures	2/0/0/0	Oktavec
	Anal. Chemistry of Complex Organic and Biol. Mixtures	2/0/0/0	Sádecká
	Analytical Spectrometry	2/0/0/0	Beinrohr
	Laboratory Practice I	0/0/0/10	Sádecká
1. semester (Bc)	Computer Evaluation of Analytical Measurement	2/0/0/0	Májek, Mocák
	Biosensors	2/0/1/0	Labuda
1. semester (Bc)	Techniques of Mixtures Separation	2/0/2/0	Matisová, Valigura
	Laboratory Practice II	0/0/0/6	Sádecká
	Electrochemistry and Electroanalytical Chemistry	2/0/1/0	Bustín
	Analytical Separation of Compounds	2/0/1/0	Krupčík
1. semester (Bc)	Trace Analysis and Microanalysis	2/0/0/0	Beinrohr, Čákrť
1. semester (Bc)	Bioanalytical Chemistry	2/0/1/0	Labuda, Mocák
	Identification of Chemical Substances	2/0/1/0	Lehotay, Liptaj
	Laboratory Practice of Specialisation	0/0/0/10	Sádecká
	Automatisation of Analytical Chemistry	2/0/0/0	Rievaj
1. semester (Bc)	Analytical Chemistry of Environment	2/0/0/0	Benická
1. semester (Bc)	Laboratory of Diploma Work	0/0/0/27	Rojkovičová

IV. CURRENT RESEARCH PROJECTS

A. VEGA Project No 1/9128/02 Development and Application of Direct Injection Assays for HPLC Analysis of Some Drugs and Toxic Compounds in Biological Samples (Jozef Lehotay).

The aim of the project was the development and the application of new assays with the possibility of direct injection of biological samples into the HPLC system. SPE (Solid Phase Extraction) precolumn was integrated directly into the HPLC system what improves validation parameter values and minimizes the personal contact with biofluids. Automated HPLC procedures for the analysis of chosen drugs, natural and toxic compounds were compared with applied electromigration methods.

Project duration: from 01.01.2002 to 31.12.2004

B. VEGA Project No 1/9129/02 Elektroanalysis by means of in-electrode coulometric titration and interdigitated array of microelectrodes. Optimization of stages of trace analysis (Dušan Bustín).

The project is oriented to the investigation of in-electrode coulometric titration in porous electrodes for calibrationless determination of trace concentrations of metals and some non-metals and to the application of elaborated procedures for automated process analysis. It also intends to contribute to employment of chronoamperometry with the segments of inter-digitated microelectrode arrays for the calibrationless analysis of electroactive species. Chronoamperograms are to be obtained under redox-cycling or isolated segment conditions. The multivariate statistical data analysis are to be used for authentication and classification of food products, environmental samples as well as for the software aided clinical diagnosis.

Project duration: from 01.01.2002 to 31.12.2004

C. VEGA Project No 1/9127/02 Development of optimum methods for analyses of enantiomers of biologically active chiral substances by high performance liquid, supercritical fluid and gas chromatography (Ján Krupčík).

This project intends to contribute to development of methods for the direct analysis of enantiomers of selected biologically active chiral compounds by high performance liquid (HPLC), supercritical fluid (SFC) and gas (HRGC) chromatography. Following subparts shall be studied in this project: (i) Computer assisted optimum methods shall be developed for direct separations of enantiomers of selected biologically active chiral compounds by HPLC, SFC and GC methods using commercially available modified cyclodextrins (GC) and macrocyclic antibiotics (SFC and HPLC). (ii) Two columns in series and two dimensional HRGC and or HPLC shall be applied for the separation of enantiomers in complex mixtures. (iii) Computer assisted deconvolution of the peak clusters obtained separating the racemic mixtures shall be applied to determine the enantiomerization barrier of the thermally labile enantiomers by dynamic HPLC, SFC and GC. (iv) Principal component analysis and cluster analysis shall be used to classify the enantioselectivity of modified α -, β - and γ -cyclodextrin used in HRGC.

Project duration: from 01.01.2002 to 31.12.2004

D. VEGA Project No 1/9126/02 Large Volume Injection in Conventional and Fast Capillary Gas Chromatography (Eva Matisová).

The aim of the project is the development of the large volume sample injection methods in combination with conventional, fast capillary gas chromatography and GC-MS for trace analysis of volatile and semi-volatile organic compounds in multicomponent model and real environmental samples. A part of the project is connected with the development of comprehensive gas chromatography (GCxGC) and its combination with the large volume sample injection for the analysis of multicomponent samples of trace analytes. A part of the project is devoted to the application of the gained knowledge to the trace and ultra-trace analysis of multicomponent mixtures of organic compounds in environmental matrices including the sample pre-treatment for the large volume sample injection.

Project duration: from 01.01.2002 to 31.12.2004

E. NATO Project No SFP 977983 Minimisation of Pesticide Residues in Processed Products and the Environment (Eva Matisová).

The project refers to pesticide science and more specifically to pesticide chemistry, and analytical methodology of residues. Pesticide residues undergo significant changes in chemical structure and concentration during food processing. The research work in the project is planned to contribute to better understanding of the effects of food processing on pesticide residues. Perfection of the analytical methodologies for detection and determination of pesticide residues at extremely low concentrations allowed in baby foods will be one of the scientific contributions of the project. Existing methods will be modified or new methods will be developed, distinguished by sufficient precision and reliability of determination of residues at or below the concentration level of 0.01 mg/kg, required by the EU directives on baby food. The identification and assessment of the critical points in the food technology processes will be a contribution to food technology.

Project duration: from 01.02.2003 to 31.06.2006

F. Aktion Oesterreich-Slowakei. Project No 45s13: "Chemometrical Classification of Food and Biologically Important Samples" (national coordinator: Ján Mocák).

Bilateral scientific project between (a) Technische Universitaet Graz, Austria, and (b) Slovak University of Technology, Bratislava, Slovakia.

Project duration: from 01.02.2004 to 4.12.2004

G. VEGA Project 1/9253/02: Electrochemical DNA biosensors for the characterization of interactions of the bound DNA, the determination of traces of compounds binding to DNA as well as activators and inhibitors of damage to DNA (Ján Labuda)

New biosensors with a DNA layer of controlled properties attached to screen-printed carbon electrodes have been prepared. Host-guest interactions for dsDNA and small molecules of selected chiral drugs and risk chemicals have been characterized using several voltammetric techniques. DNA structural changes and deep degradation as a consequence of chemical reactions of reactive oxygen radical species as well as DNA protection by selected antioxidants such as flavonoids were investigated. New analytical procedures for the simple and fast determination of trace amounts of chiral drugs were developed. The DNA biosensors were tested as simple and single-use sensors for the determination of DNA damage as well as the evaluation of antioxidative capacity of plant extracts of food industry interest.

Project duration: from 01.01.2002 to 31.12.2004

H. Project 035/2001 (USA – SK) The HPLC Study of Enantioselective Separations Using Molecular Modelling and Artificial Neural Networks on Macrocyclic Antibiotic Chiral Selectors (Jozef Lehotay).

The objective of this research project is to create a comprehensive method capable of the prediction and optimization of enantioselective separations achieved by the vancomycin chiral selector, VM-CS, in HPLC, CEC and CE. This will be accomplished by: 1) development of QSERRs to describe the retention and enantioselective separations achieved in each chromatographic mode; 2) training ANN to select optimum format and conditions, i.e. to minimize k_1' and k_2' while optimizing k_2'/k_1' , using the independent variables identified by the QSERR studies. A key element in the optimal use of CSs is an understanding of the chiral recognition mechanisms responsible for the observed enantioselective separations. Thus, a second objective is the use of the QSERRs and stopped-flow kinetic studies to construct descriptions of the chiral recognition mechanisms operating in each mode and to correlate these results with molecular modelling studies. The aim of these studies is a better understanding of the fundamental processes involved in chiral recognition.

Project duration: from 01.07.2002 to 01.07.2005

CH. EUREKA Project E!3109: Advanced Portable System for Explosive Agents Sampling, Detection and Analysis (Eva Matisová).

Project relates to the science and technology. The contribution to the science and technology should be the miniaturisation of analytical instrumentation – the development of the portable analyser of the low mass for the detection of explosives in the air and other sources based on the modern technologies in sampling, separation and detection.

Project duration: from 01.04.2004 to 31.03.2007

V. CURRENT EDUCATION PROJECTS

A. CEEPUS Project No PL-0110 04/05: “Development and improvement of modern analytical methods for monitoring the environmental pollution and introduction of the quality systems and accreditation to routine analytical laboratories” (Ján Mocák).

Educational project enables exchange of students and teachers among the following partner universities: (a) The University of Mining and Metallurgy, Cracow, Poland, (b) Karl-Frenzens-University, Graz, Austria, (c) The University of Maribor, Maribor, Slovenia, (d) The University of Pardubice, Pardubice, Czech Republic, (e) Slovak University of Technology, Bratislava, Slovakia.

Project duration: from 01.10.2004 to 30.09.2005

B. CEEPUS Project No PL-0110 03/04: “Development and improvement of modern analytical methods for monitoring the environmental pollution and introduction of the quality systems and accreditation to routine analytical laboratories” (Ján Mocák).

Educational project enables exchange of students and teachers among the following partner universities: (a) The University of Mining and Metallurgy, Cracow, Poland, (b) Karl-Frenzens-University, Graz, Austria, (c) The University of Maribor, Maribor, Slovenia, (d) The University of Pardubice, Pardubice, Czech Republic, (e) Slovak University of Technology, Bratislava, Slovakia.

Project duration: from 01.10.2003 to 30.09.2004

C. CEEPUS Project No PL-0130-03/04: Education in Separation Methods for Organic Environmental Analysis in XXI. Century (Ján Krupčík).

The main objective of this project is to improve the quality of MSc and PhD education in Analytical Chemistry at the cooperating universities, with the emphasis on modern analytical separation methods. This will be accomplished by exchange both of graduated and PhD students as well as teachers between the University of Technology Graz, University of Pardubice, Nicolaus Copernicus University in Toruń, University of Łódź, University of Veszprém, Medical Academy in Gdańsk and the Slovak University of Technology in Bratislava. Special attention will be paid on the application of hyphenated techniques and on the fitting of the educational process to the needs and settings of the European Community.

Project duration: from 01.01.2003 to 31.12.2004

D. Bilateral project MŠ SR/DAAD No 5/2002, SRN: Investigation/detection of environmental risk species by DNA-based biosensors (Ján Labuda).

The topic of the project is an investigation of interactions of species of environmental interest with deoxyribonucleic acid (DNA). Toxic chemical species interact with living organism by various ways including association and follow-up structural and chemical changes of biological material. Toxic species can be accumulated by DNA and initiate subtle or deep damage to DNA. With respect to body aging and cancer processes, the changes of DNA due to its chemical interactions are of great interest. We aspect to investigate metalorganic and metalloid species as well as metal complexes with organic ligands which are able to intercalate into cavities between DNA bases pairs.

Project duration: from 01.01.2003 to 31.12.2004

E. Grant KEGA No 3/2238/04: The preparation of modern book on analytical separation methods (Jozef Lehotay).

The aim of project is the preparation a new book "Encyclopedia of separation methods for students. The book involved new separation techniques specially in liquid and gas chromatography and electrophoreses.

Project duration: from 01.10.2004 to 30.09.2007

VI. COOPERATION

A. Cooperation in Slovakia

Institution	Type of cooperation	Responsible person	Duration
Faculty of Electrical Engineering and Information Technology (Microelect.) Bratislava	Interdigitated array of microelectrodes	Řeháček V., research fellows, Ilkovičova 3, 841 04 Bratislava	01.01.1994-
Central Agricultural Inspection and Testing, Bratislava	Field experiments for determination of residues of pesticides in fresh and processed products for baby food	Raučinová Ľuba, RNDr., Hanulova 9, 844 40 Bratislava	01.03.2002-31.12.2004
Novofruct, SK, s.r.o., Nové Zámky	Cooperation in the monitoring of pesticide residues in raw materials for baby food production and the fate of pesticides in the process of technology	Henteková M., Ing., technologist Novofruct, SK, s.r.o., Komárňanská cesta 13, 940 43 Nové Zámky	01.01.2004-
Pharmaceutical Faculty, Comenius University, Bratislava	Chiral Separation of some anaesthetics using HPLC method	Čižmárik Jozef, professor, Odbojárov 10, 832 32 Bratislava	01.01.1988-
HB REAVIS MANAGEMENT, s.r.o., B. Bystrica	Analysis of two samples, determination of NaOH and FeCl ₃	Medvec Dobroslav, Ing., Horná 65, 974 01 B.Bystrica	3.3.2004-8.3.2004
ISTRAN, s.r.o., Bratislava	Preparation and chemical analysis of solutions	Beinrohová Mária, Ing., director of concern, Vígľašská 12, 851 06 Bratislava	1.3.2004-31.12.2004
DUSLO, a.s., Šaľa	Identification and prove of Mancozeb in Novozir MN 80 by termic analyses, röntgen difraction and HPLC	Adamík Roman, RNDr., director, adm.building no. 1236, 927 03 Šaľa	1.8.2004-30.9.2004
Ústredný kontrolný a skúšobný ústav poľnohospodársky, Bratislava	Analyses of Novozir MN 80	Schlosserová, Ing. CSc., Matúšková 21, 833 16 Bratislava	19.8.2004-23.8.2004

Institution	Type of cooperation	Responsible person	Duration
Považský cukor, a.s., Trenčianska Teplá	Determination of the Metals in Sugar	Grežďová Mária, Ing., manager quality, Cukrovarská 311/9, 914 01 Trenčianska Teplá	12.7.2004- 31.8.2004

B. International Cooperation

Institution	Type of cooperation	Responsible person	Duration
UFZ Environmental Research Centre Leipzig, FRG	joint project	Wennrich Reiner, Dr., Head of the Section UFZ Leipzig-Halle, Permoserstr. 15, D-04318 Leipzig, Germany	01.01.2003-
Depart. Anal. Chemistry, Faculty of Natural Sciences, Charles University, Prague, Czech Republic	study stay of students	Barek Jiří, professor, Head of the Laboratory UNESCO Laboratory of Environmental Electrochemistry, Charles University, 128 43 Prague	01.01.2002-
Plant Protection Institute, Bulgaria	Cooperation in pesticide residues analysis	Balinova Anna, professor, Head of Toxicology, Department, PPI Kostinbrod 2230, Bulgaria	01.01.2004-
Department of Chemistry, Gilman Hall, Iowa State University, Ames, Iowa, USA	Chiral separation of optical active compounds by HPLC and HRGC	Armstrong Daniel Wain, professor, Iowa State University/Ames, National Laboratory, Gilman Hall, Ames, IA 50011 USA	01.01.1997-
Department of Organic Chemistry, University of Gent, Gent, Belgium	Chiral separations by HRGC	Sandra Pat, professor, Gent University, Department of Organic Chemistry 9000 Gent, Belgium	01.01.1996-
Nicholas Copernicus University, Toruń, Poland	Trace analysis in GC and HPLC development of new chemical bounded phases	Buszewski Boguslaw, professor, NCU, Faculty of Chemistry, Gagarin Street 7, 87-100 Toruń, Poland	01.01.1995-
School of Chemistry, Monash University, Melbourne, Australia	Electrochemistry. It started during the working stay in Melbourne in 1992-94.	Bond Alan, professor, head of Department, Clayton, Vic. 3800, Australia	01.02.1992 -
Department of Building Materials, University of Mining and Metallurgy, Cracow, Poland	Electroanalytical chemistry and chemometrics, common CEEPUS projects (exchange of students and teachers)	Bobrowski Andrzej, professor, Al. Mickiewicza, PL-30-059 Cracow, Poland	01.09.2001 -
Department of Analytical Chemistry and Radiochemistry, Technical University, Graz, Austria	Food analysis, bilat. scient. project Austria-Slovakia 37s15 „Chemometrical Classification of Food and Biologically Important Samples"	Lankmayr Ernst, professor, vice-head of Department, Techniker str. 4, A-8010 Graz, Austria	01.03.2002 -
Department of Chemistry, Faculty of Chemistry and Chemical Engineering, University of Maribor, Maribor, Slovenia	Cooperation in food analysis and environmental chemistry	Brodnjak-Vončina Darinka, professor, Smetanova 17, 2000 Maribor, Slovenia	01.01.2004-
Department of Analytical Chemistry, University of Pardubice, Pardubice, Czech Republic	joint project	Jandera Pavel, professor, Čsl. légií 565, 532 10 Pardubice, Czech Republic	01.01.2004-

C. Membership in Domestic Organizations and Societies

Name	Organisation or Society	Position	Valid date
Bustin Dušan	Chemical Papers Editorial Board	member	01.01.1991-
Bustin Dušan	Scientific Council of FCHPT	member	01.02.1990-
Krupčík Ján	Analytical Group of SCHS	chairmann	01.01.1992-
Labuda Ján	Academy Senate of FCHPT	member	01.03.2002-
Lehotay Jozef	Union of Slovak Scientific Society, Analytical Chemistry Groupe	chairmann	04.03.2001-
Lehotay Jozef	The Ministry of Education SR, Scientific Agency (VEGA)	member	30.04.2002-
Lehotay Jozef	Commission for air/pollution (TNK 28)	member	01.01.1999-
Lehotay Jozef	Commission for waste management (TNK 31)	member	01.01.1999-
Lehotay Jozef	Scientific Council of FCHPT	member	01.02.2003-
Lehotay Jozef	Agency for support of science and technique Ministry of education	member of advisory board	10.09.2003-
Matisová Eva	EU Centre of Excellence in Environmental Health Research Institute of Preventive and Clinical Medicine, Bratislava	member of advisory board	01.01.2003-
Mocák Ján	Slovak Medical Society, Bratislava, Slovakia (honorary member)	member	01.10.1998 -
Mocák Ján	Scientific journal "Laboratorna diagnostika" (Laboratory Diagnostics), Bratislava, Slovakia	member of advisory board	01.09.1996-

D. Membership in International Organisations and Societies

Name	Organisation or Society	Position	Valid date
Beinrohr Ernest	Gessellschaft Deutcher Chemiker, Frankfurt, Germany	member	01.06.1990-
Bustin Dušan	IUPAC Fellowship, Switzerland	member	07.03.2002-
Krupčík Jozef	European Commission Science, Research and Developments, expert for the evaluation of proposals, Brussel, Belgium	other	01.01.1999- 31.12.2005
Labuda Ján	Federation of European Chemical Societies and Professional Institutions, the Division of Analytical Chemistry (Delegate of SCHS)	other	06.09.1999-
Labuda Ján	Sensors, Editorial Board of the journal, Basel, Switzerland	member	01.01.2001-
Lehotay Jozef	European Commission Science, Research and Developments, expert for the evaluation of proposals, Brussel, Belgium	other	23.02.1999-
Lehotay Jozef	Chemical Analysis, Editorial Board of the journal, Warszawa, Poland	member	07.11.2001-

E. Visitors from abroad

Name	Organisation or Institution	State	Date / Duration
Zebrowski, V.	Nicolas Copernicus University, Torun	Poland	February 2004 (1 month)
Bobrowski, A.	University of Mining and Metallurgy, Crakow	Poland	March 2004 (10 days)
Ligor, M.	Nicolas Copernicus University, Torun	Poland	March 2004 (5 days)
Kriváň, V.	University Ulm, Ulm	Germany	March 2004 (1 days)
Brodnjak-Vončina, D.	University of Maribor, Maribor	Slovenia	March-April 2004 (10 days)
Serdť, K.	University of Maribor, Maribor	Slovenia	March-April 2004 (26 days)
Islamčević, M.	University of Maribor, Maribor	Slovenia	March-April 2004 (26 days)

Name	Organisation or Institution	State	Date / Duration
Mattusch, J.	Environmental Research Centre (UFZ), Leipzig	Germany	July 2004 (10 days)
Serdt, K.	University of Maribor, Maribor	Slovenia	November 2004 (21 days)
Lankmayr, E.	Technical University Graz, Graz	Austria	November 2004 (3 days)

F. Visits of Staff Members and Postgraduate Students in Foreign Institutions

Name	Organisation / Institution / Conference	State	Date / Duration
Benická, E.	International conference Hyphenated techniques in chromatography, University of Gent, Gent	Belgium	February 2004 (7 days)
Blahová, E.	27th International Symposium on Capillary Chromatography, Riva del Garda	Italy	May-June 2004 (5 days)
Blahová, E.	56th Congress of Chemical Societies, Ostrava	Czech Republic	September 2004 (4 days)
Dömötörövá, M.	Central Veterinary Examinational Office, Stuttgart	Germany	March-April 2004 (6 days)
Fedurcová, A.	56th Congress of Chemical Societies, Ostrava	Czech Republic	September 2004 (4 days)
Fedurcová, A.	10th International Symposium on Separation Science, Opatija	Croatia	October 2004 (5 days)
Ferancová, A.	Environmental Research Centre (UFZ), Leipzig-Halle	Germany	June-July 2004 (1 month)
Hercegová, A.	Central Veterinary Examinational Office, Stuttgart	Germany	March-April 2004 (6 days)
Hercegová, A.	27th International Symposium on Capillary Chromatography, Riva del Garda	Italy	May-June 2004 (6 days)
Hroboňová, K.	27th International Symposium on Capillary Chromatography, Riva del Garda	Italy	May-June 2004 (5 days)
Hrouzková, S.	RS Dynamics, Prague	Czech Republic	November 2004 (2 days)
Karasová, G.	56th Congress of Chemical Societies, Ostrava	Czech Republic	September 2004 (4 days)
Karasová, G.	10th International Symposium on Separation Science, Opatija	Croatia	October 2004 (5 days)
Kirchner, M.	Central Veterinary Examinational Office, Stuttgart	Germany	March-April 2004 (6 days)
Kirchner, M.	27th International Symposium on Capillary Chromatography, Riva del Garda	Italy	May-June 2004 (6 days)
Krupčík, J.	University of Tuebingen, Tuebingen	Germany	January 2004 (3 days)
Krupčík, J.	Organizing Committee of Denver Symposium, Denver	USA	July-August 2004 (15 days)
Krupčík, J.	27th International Symposium on Capillary Chromatography, Riva del Garda	Italy	May-June 2004 (5 days)
Krupčík, J.	10th International Symposium on Separation Science, Opatija	Croatia	October 2004 (5 days)
Labuda, J.	Faculty of Natural Sciences, Charles University, Prague	Czech Republic	February 2004 (2 days)
Labuda, J.	Environmental Research Centre (UFZ), Leipzig-Halle	Germany	March-April 2004 (15 days)
Labuda, J.	Modern Electrochemical Methods, International Seminar, Jetřichovice	Czech Republic	May 2004 (4 days)

Name	Organisation / Institution / Conference	State	Date / Duration
Labuda, J.	Euroanalysis XIII. European Conference on Analytical Chemistry, Salamanca	Spain	September 2004 (8 days)
Labuda, J.	Institute of Biophysics AS, Brno	Czech Republic	June 2004 (1 day)
Labuda, J.	Faculty of Natural Sciences, Charles University, Prague	Czech Republic	August 2004 (4 days)
Labuda, J.	International Workshop on the Application of Nanotechnologies to Biosensors, Institute for Health and Consumer Protection, Joint Research Centre EC, Milano	Italy	December 2004 (4 days)
Lehotay, J.	University of Tuebingen, Tuebingen	Germany	January 2004 (3 days)
Lehotay, J.	Organizing Committee of Denver Symposium, Denver	USA	July-August 2004 (15 days)
Lehotay, J.	27th International Symposium on Capillary Chromatography, Riva del Garda	Italy	May-June 2004 (5 days)
Lehotay, J.	56th Congress of Chemical Societies, Ostrava	Czech Republic	September 2004 (5 days)
Lehotay, J.	10th International Symposium on Separation Science, Opatija	Croatia	October 2004 (5 days)
Májek, P.	27th International Symposium on Capillary Chromatography, Riva del Garda	Italy	May-June 2004 (6 days)
Matisová, E.	Institute of Technologies and Analytics, Vienna University of Technology, Vienna	Austria	January 2004 (2 days)
Matisová, E.	International Symposium 5th European Pesticide Residue Workshop, Stockholm	Sweden	June 2004 (7 days)
Matisová, E.	27th International Symposium on Capillary Chromatography, Riva del Garda	Italy	May-June 2004 (6 days)
Matisová, E.	RS Dynamics, Prague	Czech Republic	November 2004 (2 days)
Mocák, J.	University of Maribor, Maribor	Slovenia	February 2004 (10 days)
Mocák, J.	Seminar Data Analysis 2004/I, Pardubice	Czech Republic	April 2004 (3 days)
Mocák, J.	Technische University of Graz, Graz	Austria	June-July 2004 (9 days)
Mocák, J.	University of Mining and Metallurgy, Krakow	Poland	October 2004 (7 days)
Mocák, J.	Slovenian Chemical Days, Maribor	Slovenia	September 2004 (3 days)
Mydlová, J.	27th International Symposium on Capillary Chromatography, Riva del Garda	Italy	May-June 2004 (5 days)
Ovádek, R.	International Workshop on the Application on Nanotechnologies to Biosensors, Institute for Health and Consumer Protection, Joint Research Centre EC, Milano	Italy	December 2004 (4 days)
Rojkovičová, T.	Nicolas Copernicus University, Torun	Poland	January-March 2004 (2 months)
Rojkovičová, T.	10th International Symposium on Separation Science, Opatija	Croatia	October 2004 (5 days)
Střelec, M.	56th Congress of Chemical Societies, Ostrava	Czech Republic	September 2004 (4 days)
Špánik, I.	27th International Symposium on Capillary Chromatography, Riva del Garda	Italy	May-June 2004 (6 days)
Tomčík, P.	Physical and Theoretical Chemistry Laboratory, Oxford University	England	January-September 2004 (9 months)

VII. THESES AND DISSERTATIONS

A. Graduate Theses (Bc Degree) for state examinations after three years of study

Name	Title of Thesis	Supervisor
Benisková, Z.	Fast Gas Chromatography Methods in Praxis.	Benická, E.
Čacho, F.	On-line Joint Electrochemical and Photometric Methods to Estimate Toxic Elements in Waters.	Manová, A.
Gardlíková, P.	Application of Capillary Isotachophoresis in Clinical Analysis.	Sádecká, J.
Gyöngyová, A.	The Utilisation of Gas Chromatography and Capillary Electrophoresis for Determination of Origin and Authenticity of Selected Food Commodities.	Špáňik, I.
Hanková, Z.	Determination of Trace Contaminants in Waters by Flow-through Coulometry and Chronopotentiometry.	Beinrohr, E.
Húšková, R.	Analysis of Pesticide Residues by Combination of Matrix Solid Phase Disperzion and Fast Capillary Gas Chromatography.	Matisová, E.
Kujovský, M.	Determination of Trace Contaminants in Waters by Flow-through Coulometry. 1. Determination of Ascorbic Acid by Flow-through Coulometry and Chronopotentiometry.	Beinrohr, E.
Šimková, D.	Analysis of Organic Acids in Food Samples by High Pressure Liquid Chromatography Method.	Hroboňová, K.
Škvarková, L.	New Pesticides and Their Utilization in Practise.	Hercegová, A.
Švorc, Ľ.	Relationships Between Chemical Structure and Biological Activity of Indolizine and 1,4 - Dihydropyridine Derivatives.	Vrábel, V.
Vančová, M.	Interaction Study of Chiral Separation of Some Phenylcarbamic Acid Derivatives by High Pressure Liquid Chromatography Method.	Lehotay, J.

B. Graduate Theses (MS Degree) for state examinations after five years of study

Name	Title of Thesis	Supervisor
Bubničová, K.	Detection of Environmental Risk Substances Using DNA Biosensor.	Labuda, J.
Danková, K.	Chemometric Analysis and Classification of Biochemical and Food Samples Data.	Mocák, J.
Dovalovská, Z.	Application of Microelectrodes in Voltammetric Analysis.	Rievaj, M.
Farkašová, A.	Utilization of the Preconcentration Techniques in Ultratrace Analyse of Pesticide Residues.	Hercegová, A.
Chlebanová, J.	Calculation and Prediction of Electrochemical Signals.	Mocák, J.
Jenčušová, P.	Amperometry on Macro- and Micro-electrodes. Application in Analytical Chemistry.	Bustin, D.
Kovařová, Ľ.	Use of DNA Sensor for the Determination of Risk Substances.	Vaníčková, M.
Meričko, D.	Influence of Chiral Stationary Phase Composition on Separation of Some Enantiomers of Phenylcarbamic Acid Derivatives by HPLC.	Lehotay, J.
Ondřejčka, J.	Dual Column Gas Chromatographic Analysis of Volatile Compounds.	Benická, E.
Otrekal, R.	Utilisation of GC-MS for Ultratrace Analysis of Pesticides.	Matisová, E.
Siposová, E.	Using DTC Complexes on Determination of Trace Amounts of Metal Ions after Ion-exchanger Preconcentration.	Oktavec, D.

C. Dissertations (PhD)

Name	Title of Thesis	Supervisor
Blahová, E.	New approaches in sample-handling of complex matrices before HPLC analysis.	Lehotay, J.
Rojkovičová, T.	Enantioseparations of some derivates of organic compounds by HPLC method – interaction study, kinetic study, thermodynamic study.	Lehotay, J.

E. Habilitation Theses

Name	Title of Thesis	Supervisor
Hroboňová, K.	High performance liquid chromatography in analysis of drugs and compounds influence environment.	Bustin, D.
Sádecká, J.	Analysis of complex biological systems by capillary isotachopheresis.	Lehotay, J.

VIII. PUBLICATIONS

Books, Chapters in monographs

- [1] Mocák, J.: Computer Modeling. In: P.J. Worsfold, A. Townshend, C.F. Poole, Eds.: Encyclopedia of Analytical Science. 2nd. Ed. , p. 208-216, Elsevier, Oxford, 2004. ISBN 0-12-764100-9.
- [2] Sádecká, J., Polonský, J. : Food and nutritional analysis: Soft drinks. In: Encyclopedia of analytical science. Worsfold P. J. , Townshend A., Poole C. E. (Ed.). Elsevier 2004, p.272-279. ISBN 0127641009.

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- [1] Balla, B., Mocák, J., Pivovarníková, H., Balla, J.: Comparative study of cardiovascular markers data by various techniques of multivariate analysis. *Chemometrics Intell. Lab. Systems* 72, 259-267 (2004).
- [2] Balla, B., Mocák, J., Varmusová, E., Kavková, D., Tudík, I.: Assessment of Efficiency of Laboratory Methods. *Chem Listy* 98, 86-91 (2004).
- [3] Banks, C. E., Hyde, M. E., Tomčík, P., Jacobs, R., Compton, R. G.: Cadmium Detection via Boron Doped Diamond Electrodes: Surfactant Inhibited Stripping Voltammetry. *Talanta* 62, 279-286 (2004).
- [4] Blahová, E., Brandšteterová, E., Fabulová, A.: Isolation and Determination of Phenolic Compounds in Fruit-Green Tea. *J. Liq. Chrom. Rel. Technol.* 27 (1), 31-38 (2004)
- [5] Blahová, E., Lehotay, J., Skačáni, I.: The Use of Molecularly Imprinted Polymer for Selective Extraction of (+)-catechin. *J. Liq. Chromatogr.* 27 (17), 2715 – 2731 (2004).
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- [8] Ďungelová, J., Lehotay, J., Krupčík, J., Čižmárik, J., Armstrong, D. W.: Study of Mechanism of Enantioseparation. Part VI. Thermodynamic Study of Influence of Temperature on HPLC Separation of Some Enantiomers of Phenylcarbamic Acid Derivatives Using (S,S) Whelk-O 1 Column. *J. Sep. Sci.*, 27 (12), 983 - 990 (2004).
- [9] Ďungelová, J., Lehotay, J., Krupčík, J., Čižmárik, J., Welsch, T., Armstrong, D. W.: Selectivity Tuning of Serially Coupled WHELK-01 S(+) and WHELK-01 R(-) Columns in HPLC. *J. Chromatogr. Sci.*, 42 (3), 135 - 139 (2004).
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- [11] Ferancová, A., Heilerová, L., Korgová, E., Šilhár, S., Štěpánek, I., Labuda, J.: Anti/pro-oxidant properties of selected standard chemicals and tea extracts investigated by DNA-based electrochemical biosensor. *Eur. Food Res. Technol.* 219, 416-420 (2004).
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- [41] Rievaj, M., Lietava, J., Bustin, D.: Electrochemical Determination of Nitric Oxide in Blood Sample. *Chem. Pap.* 58, 306-310 (2004).

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- [2] Rievaj, M., Lietava, J., Bustin, D.: Electrochemical Determination of Nitric Oxide in Blood Sample. *Chem. Pap.* 58, 306-310 (2004).
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Other publications

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Lectures and posters

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Text books

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- [2] Buzinkaiová, T.*, Štorcel, M.: Determination of donepezil used in clinical practice. In: Proceedings of the 12th International Symposium on Advances and Applications of Chromatography in Industry, June 29 - July 1, 2004, Bratislava, Slovak Republic, H.12 Ed.: Berek D., Hutta M., Kaniansky D., Krupčík J., Matisová E., Soják L., ISSN 1335-8
- [3] De Villiers, A., Májek, P.*, Vanhoenacker, G., Sandra, P.: Analysis of wine phenolics by direct injection LC-DAD-IT-MS. In: Proceedings of the 27th International Symposium on capillary Chromatography, Riva del Garda, Italy, 31. mája - 4. júna 2004, Edited by T.Sandra and P.Sandra, I.O.P.M.S. Kortrijk, Belgium, P26, (Po).
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- [5] Dömötöróvá, M.*, Hercegová, A., Matisová, E., Kirchner, M.: Comparison of Methods of Sample Preparation for GC Analysis of Pesticide Residues in Fruit Matrix. In: Proceedings of the 27th International Symposium on capillary Chromatography, Riva del Garda, Italy, 31. mája - 4. júna 2004, Edited by T.Sandra and P.Sandra, I.O.P.M.S. Kortrijk, Belgium, C.06 (Po)
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- [7] Fedurcová, A.*, Lehotay, J., Krupcik, J., Rojkovičová, T., Čižmárik, J., Armstrong, D.W.: Thermodynamic Study of HPLC Separation of Some Enantiomers of Phenylcarbamic Acid Derivates Using Teicoplanin Aglycone Column In: Proceedings of the 27th International Symposium on capillary Chromatography, Riva del Garda, Italy, 31. mája - 4. júna 2004, Edited by T.Sandra and P.Sandra, I.O.P.M.S. Kortrijk, Belgium, B 11, (Po)
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Contracts

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- [2] Krupčík, J.: Development of optimum methods for analyses of enantiomers of biologically active chiral substances by high performance liquid, supercritical fluid and gas chromatography. Grant. GAV No 1/9127/02
- [3] Krupčík, J.: Education in Separation Methods for Organic Environmental Analysis in XXI. Century. Grant. CEEPUS Project No. PL-0130-03/05.
- [4] Labuda, J.: Electrochemical DNA biosensors for the characterization of chemical interactions of the bound DNA, the determination of traces of compounds binding to DNA as well as activators and inhibitors of damage to DNA. VEGA Project No 1/9253/02
- [5] Lehotay, J.: Development and Application of Direct Injection Assays for HPLC Analysis of Some Drugs and Toxic Compounds in Biological Samples. Grant. VEGA Projekt No 1/9128/02
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- [9] Matisová, E.: Minimization of Pesticide Residues in Processed Products and the Environment (2002-2005). Grant. NATO SfP-977983
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- [11] Mocák, J. (slov. koordinátor): Development and improvement of modern analytical methods for monitoring environmental pollution, introduction of quality systems and accreditation to routine analytical laboratories. Grant. CEEPUS Project No. PL-0110-03/04 (1.10.2003 - 30.9.2004).
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DEPARTMENT OF BIOCHEMICAL TECHNOLOGY

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I. STAFF

Full Professors:

Fedor Malík, PhD, DSc; Ján Šajbidor, PhD, DSc.

Associate Professors:

Michal Rosenberg, PhD; Daniela Šmogrovičová, PhD; Katarína Dercová, PhD; Mária Šturdíková, PhD; Milan Čertík, PhD.

Assistant Professors :

Helena Hronská, PhD; Lucia Sláviková

Research Fellows:

Ľudmila Krištofiková; Dušan Slugeň, PhD.

PhD Students:

Michal Brygin; Nina Borodovčáková; Silvia Firáková; Katarína Furdíková; Katarína Kundrliková; Zuzana Mlichová; Martin Rebroš; Zuzana Sejáková; Radoslav Selecký; Milan Valach; Igor Voštier

Technical staff:

Vlasta Sládková; Jaroslava Telgárska

II. TEACHING AND RESEARCH LABORATORIES

A. Teaching laboratories:

Laboratory of Bioanalytical Chemistry
Laboratory of Biotechnology
Laboratory of Fermentation Beverages
Laboratory of Pharmaceutical Biotechnology
Laboratory of Environmental Biotechnology

B. Research laboratories:

Laboratory for the design of bioactive compounds
Laboratory for biotechnological production of organic acids and fine chemicals
Laboratory for study, isolation and transformation of microbial lipids
Laboratory of secondary metabolites
Laboratory of wine microbiology and oenology
Laboratory of bioengineering
Laboratory for solid-state fermentations
Laboratory for solid-state fermentations
Laboratory for microbial degradation of xenobiotics
Laboratory of brewing technology and ethanol production

III. TEACHING

A. Undergraduate Study:

5. semester (Bc)	Principles in Biotechnology	2/0/0	Šajbidor
	Xenobiochemistry	2/0/0	Dercová
6. semester (Bc)	Terminal Work	0/0/4	Čertík, Dercová, Malík, Rebroš, Šmogrovičová, Brygin, Valach, Šturdíková
1. semester (MSc)	Enzymology and Enzyme Engineering	2/0/0	Augustín
	Laboratory in Enzymology and Enzyme Engineering	0/2/0	Sláviková
	Information Systems and Data Processing	1/1/0	Šmogrovičová, Selecký, Firáková

	Food Biotechnology	2/0/1	Malík, Slugeň
1. semester (MSc)	Bioanalytical Methods	2/0/0	Šajbidor
	Laboratory in Bioanalytical Methods	0/0/2	Brygin, Čertík, Rebroš, Sláviková, Kundříková
	Biosynthesis and Transformation of Metabolites	2/0/0	Rosenberg
	Laboratory in Biosynth. and Transformat. of Metabolites	0/0/1	Rosenberg
1. semester (MSc)	Terminal Work	0/0/5	Čertík, Dercová, Křištofiková
2. semester (MSc)	Bioanalytical Methods	2/0/0	Šajbidor
	Laboratory in Bioanalytical Methods	0/0/2	Brygin, Čertík, Rebroš, Sláviková, Kundříková
	Bioengineering	0/2/0	Slugeň
	Pharmaceutical Biotechnologies	2/0/0	Šturdíková
2. semester (MSc)	Laboratory in Pharmaceutical Biotechnologies	0/0/1	Šturdíková, Firáková
	Molecular Biology and Genetics	2/0/0	Čertík
	Technical Microbiology	2/0/0	Šturdík
	Information Systems and Data Processing	1/1/0	Šmogrovičová, Selecký, Firáková
2. semester (MSc)	Nutritional and Functional Properties of Food	2/0/0	Slugeň
	Terminal Work Special Praxis	0/0/5	Čertík, Dercová, Rosenberg, Šajbidor, Šmogrovičová, Šturdíková, Malík
	Environmental Biotechnology	2/0/0	Dercová
3. semester (MSc)	Laboratory in Environmental Biotechnology	0/0/2	Dercová
	Malting and Brewing	2/0/0	Šmogrovičová
	Laboratory in Malting and Brewing	0/0/1	Šmogrovičová, Selecký
	Chemistry and Microbiology of Wine	2/0/0	Malík
3. semester (MSc)	Laboratory in Chemistry and Microbiology of Wine	0/0/1	Slugeň, Furdíková
	Microbial Biomass and Distillery	2/0/0	Šmogrovičová
	Laboratory in Microbial Biomass and Distillery	0/0/1	Šmogrovičová, Selecký
	Biochemical and Genetic Regulations	2/0/0	Šturdík, Valach
3. semester (MSc)	Laboratory in Biochemical and Genetic Regulations	0/0/1	Valach, Brygin
	Gene Manipulations	2/2/0	Čertík
	Special Laboratory Exercises	0/0/6	Čertík, Dercová, Šajbidor, Malík, Rosenberg, Šmogrovičová, Šturdíková, Valach
4. semester (MSc)	Diploma Work		Čertík, Dercová, Malík, Křištofiková, Rosenberg, Šmogrovičová, Slugeň, Šturdíková, Valach

IV. CURRENT RESEARCH PROJECTS

A. VEGA Project No 1/9131/02 Application of microorganisms in food industry and agriculture-biotechnological aspects (Ján Šajbidor)

Project is focused especially on biotechnology production of pharmaceutically active and attractive compounds and *Thamnidium elegans* was selected as a producer of gamma-linolenic acid (GLA). Effort was put on the screening suitable substrates and physiological regulation of solid state fermentation in order to achieve bio products with aimed GLA content. We isolated bacteria from ruminant micro flora, especially *Butyrivibrio* sp. These strains utilized extra cellular linoleic acid and transform it via anaerobic pathway into conjugated form in the range from 0.7 to 18.8 mg per gram of dry cells. We isolated and tested micro organisms with degradation ability for bioremediation technologies. Natural degradation ability of micro organisms was improved with some methods: bio stimulation (addition of nutrients, especially nitrogen and phosphorus), bio augmentation (addition of micro organisms) and induction (addition of terpenoid compounds).

Project duration: from 01.01.2002 to 31.12.2004

B. VEGA Project No 1/0067/03 Immobilized technologies: Implementation of new immobilization techniques/technologies into plant fermentation and biotransformation and their industrial applications (Ernest Šturdík)

One of the main aims of the project has been to test the selected variety of hydrogels for cell immobilization by techniques of entrapment and encapsulation. These should be applied in fermentation technologies applicable in industrial praxis, mainly in production of ethanol from whey or starch hydrolysates or for production of low- or non-alcoholic beer. Yeast cells were used when immobilized in hydrogels (alginate, pectate, carrageenan) and tested in fermentation processes under batch, semi-continuous and continuous conditions regarding to study effect of immobilization on biological part as well as on transport and stability parameters. Electrochemical and microcalorimetric biosensors have been constructed and successfully applied to monitor the processes mainly of ethanol fermentation as well as on glycerol biotransformation.

Project duration: from 01.01.2003 to 31.12.2005

C. VEGA Project No 1/9130/02 Biotechnological aspects of classical and alternative fermented beverages production (Daniela Šmogrovičová)

The aim of the project is an improvement of classical beverages fermentation productivity - beer (bottom fermented and special), production of different categories of wine (still, petillant, sparkling and wines "under veil") and production of fermented beverages with lowered content of alcohol but the traditional character and taste. An increase in gravity results in higher metabolic activity and increased ethanol production, but an effect of osmotic pressure and toxicity of produced ethanol affected yeast viability. Since immobilised cells show various modifications in physiology and metabolic activity, biochemical composition and morphology, as well, an application of immobilised yeast can improve their ability to ferment concentrated substrates in dependence on carrier and technique used for immobilisation and protect the yeast cells against osmotic and ethanolic stress. Immobilisation also influence yeast by metabolites co-production and consequently flavour and character of fermented beverage. Integration of up-to-date knowledge about yeast properties and metabolism should result into elucidation of ethanol tolerance mechanism, improvement of fermentation and production of alternative beverages.

Project duration: from 01.01.2002 to 31.12.2004

D. National project 2003 SP 27/028 0E 02/028 0E 02 Quality, safety and functionality of primary food resources (Milan Čertík)

The project is coordinated by Research Institute of Plant Production where some tasks of the project are carried out in our Faculty. Objectives of these tasks are focused on a) Enhancement of nutritional value of various types of cereals by polyunsaturated fatty acids, b) Evaluation and selection of primarily food resources and preparation of functional food with preventive-medical properties, c) Study of genotype dependence on lipid profile in oil seeds, d) Identification of essential fatty acids donors in cereals.

Project duration: from 22.10.2003 to 31.12.2005

E. National project 2003 SP 27/028 0E 01/028 0E 01 Quality, safety and functionality of primary food resources (Michal Rosenberg, Milan Čertík)

The project is coordinated by Research Institute of Food where one of the task is carried out in our Department. The task is aimed on preparation of conjugated linoleic acid (CLA) from microorganisms. The first step is focused on finding of an effective method for isolation and purification of CLA and on optimizing of suitable analytical method based on gas chromatography for determination CLA content in isolated lipids.

Project duration: from 1.2.2004 to 30.6.2004

F. National project of research and development 028 The use of domestic materials and resources - Phytosterols and fatty acid derivatives (Milan Čertík, Michal Rosenberg)

The aim of the project is focused on evaluation of co-products from rape seed oil and other industrial resources for technological preparation of phytosterols and fatty acid derivatives. The project is tended to optimization of isolation and purification processes for obtaining of phytosterols. The project will also solve the possible to prepare fatty acid derivatives for their use in food and pharmaceutical industry.

Project duration: from 1.7.2004 to 31.12.2006

G. APVT project (APVT-99-005002) Total treatment of Medicago sativa as the revivable energy source using standard and biotechnological methods, part: Biotechnological treatment of Medicago sativa (Michal Rosenberg)

The project is coordinated by LIKO a.s. Bratislava. The goal of this part of project is the evaluation of liquid parts of Medicago sativa (obtained by hydrolysis and pressing of plant) for biotechnological production of ethanol and lactic acid. The Bacillus coagulans and Saccharomyces cerevisiae were used as production strains.

Project duration: from 1.7.2004 to 31.12.2004

H. National project 2004 ŠP 26 028 OC 05 Complex evaluation of plant sources, part 1.4. Rare saccharides and complex valuation of beet slice (Michal Rosenberg)

The project is coordinated by Research Institute of Food. Verification of methods used for preparation of L-arabinose from beet slice is the main aim of the project. The other sugars obtained from this process will be used as energy source for yeast biomass preparation with high content of trehalose. Purification methods for sugar preparation will be verify.

Project duration: from 1.5.2004 to 31.12.2004

I. VEGA Project No 1/1309/04 Biotechnological application of microorganisms in biodegradation of persistent organic pollutants (POPs) for decontamination of polluted environment (soil, water); the effect of POPs as stress environmental factors acting on microbial cell (Katarína Dercová)

The project is focused on an investigation of a possibility to use catabolic ability of microorganisms to degrade persistent chlorinated hydrophobic organic pollutants in different environmental components (water, soil). Study of the effect of the xenobiotics on microbial cells will be included in the project because presence of these compounds markedly influences biodegradation ability, survival, and colonization of microorganisms at application in bioremediation technologies during decontamination of the environment.

The goals of the project are to study metabolic pathways of chloroaromatics, intermediate and endproducts, their toxicity; to isolate and identify particular microbial strains with the appropriate biodegradation ability; to investigate biodegradation of PCBs, PCP, and PAHs in liquid media and defined soil samples, in aerated and intact soil profiles; to determine the effect of chloroaromatics as potential stress factors on microbial cells (membrane fluidity) with the emphasis on content and composition of total lipids and fatty acids in the major lipid membrane structures; and to study visible-light-induced catalytic degradation and chemical oxidation (Fenton reaction) of the persistent organic pollutants as a pretreatment step of biodegradation.

Project duration: from 1.1.2004 to 31.12.2006

V. CURRENT EDUCATION PROJECTS

A. CEEPUS H-158 Green Network in Central Europe (Daniela Šmogrovičová)

The network relays mainly on the institutional and personal contacts that were established in a previous CEEPUS network (H-0115). The main objective of this network was to emphasise and strengthen the ecological approach in university education in the fields of horticulture and food science. Continuing this activity in a considerably renewed and extended frame, the present collaboration program focuses on three connecting components of the quality of life: the safety, quality and health aspects of horticultural and food production, landscape ecology and meliorization as well as management of ecological conflicts with the tools of landscape architecture.

Project duration: from 01.09.2002 to 31.08.2005

VI. COOPERATION

A. Cooperation in Slovakia

Institution	Type of cooperation	Responsible person	Duration
Allcop, Bratislava	Licence agreement	Štubňa Slavomír, director, Kopčianská 61, 851 01 Bratislava	01.01.2004 - 31.12.2004

Water Research Institute, Bratislava	Toxicity of chlorophenols	Tóthová Lívia, Nábr. arm. gen. L. Svobodu 5, 812 49 Bratislava	01.01.2000 - 31.12.2005
Soil Science and Conservation Research Institute	Sorption of pentachlorophenol on organomineral complex - zeolite and humic acids	Barančíková Gabriela, Rejmanova 1, 080 01 Prešov	01.01.2000 - 31.12.2005
Institute of Chemistry, Slovak Academy of Sciences, Bratislava	Development of biosensors	Gemeiner Peter, head of the research group, Dúbravská cesta 9, 842 38 Bratislava	01.01.2003
Institute of Chemistry, Slovak Academy of Sciences, Bratislava	Study of adaptation properties of yeasts under stress conditions	Breierová Emília, head of the Culture Collection of Yeasts, Dúbravská cesta 9, 842 38 Bratislava	01.09.2000 -
Institute of Chemistry, Slovak Academy of Sciences, Bratislava	Preparation and isolation of recombinant proteins	Šimůth Jozef, head of laboratory of gene engineering, Dúbravská cesta 9, 842 38 Bratislava	01.01.2003 -
Research Institute of Plant Production, Piešťany	Quality, safety and functionality of primary food resources	Mišťina Timotej, director, Bratislavská cesta 122, 921 68 Piešťany	22.10.2003 – 31.12.2005
Research Institute of Food, Bratislava	Quality, safety and functionality of primary food resources	Kováč Milan, director, Priemyselná 4, 824 75 Bratislava	01.05.2003 -
LIKO, Ltd. Bratislava	Phytosterols and fatty acid derivatives	Martin Minárik, director, Miletičova 23, Bratislava	01.07.2004 – 31.12.2006

B. International Cooperation

Institution	Type of cooperation	Responsible person	Duration
Department of Pharmaceutical Sciences, North Dakota State University, Fargo, North Dakota, USA	Prediction of the fate of xenobiotics in the environment	Baláz Štefan, professor, Sudro Hall 108, Fargo, North Dakota, USA	01.01.1996
School of Biological Sciences, University of Portsmouth, UK	SPMD – monitoring of POPs	Vrana Branislav, asistant professor, King Henry I. Street PO12DY, Portsmouth, Hampshire, UK	01.09.2003 - 01.09.2005
Institute of Soil, Water and Environmental Sciences, The Volcani Center A.R.O, Bet Dagan, Israel	Sequestration of persistent organic pollutants	Tandlich Roman, asistant professor, P.O.Box 6, Bet Dagan, 50250 Israel	01.10. 2002 - 30.09. 2004
Mega a.s., Stráž pod Rálskem, Czech Republic	Encapsulation of microorganisms to PVA Gel	Novák Luboš, director, Pod Vinicí 83 471 27 Stráž pod Rálskem, Czech Republic	01.02.2004 - 19.12.2004
Office International de la Vigne et du Vin, Paris, France	Evaluation of wine	Dutruc-Rosset Georges, general director, 18, rue d'Aquesseau 75008 Paris, France	01.01.1983
Faculty of Chemistry, Technical University Brno, Czech Republic	Study of stress conditions on carotenogenic yeasts	Márová Ivana, vicedean, Purkyňova 118, 61200 Brno, Czech Republic	01.01.2003 -
National Center for Agricultural Utilization Research, ARS, USDA, Peoria, Illinois, USA	Biotransformation of oils to value-added compounds	Ching Hou, Group leader Peoria, Illinois, USA	25.09.2004 -
Catholic University of Louvain-la Neuve, Belgium	Biodegradation of polyaromatic hydrocarbons	Spiros Agathos, head of Department of Applied Chemistry and Bioindustries, Place Croix du Sud, 2/9-1348 Louvain, Belgium	01.02.2003 – 31.05.2006

C. Membership in Domestic Organizations and Societies

Name	Organisation or Society	Position	Valid date
Čertík Milan	Slovak Society for Agriculture, Forestry, Food and Veterinary Sciences	member	01.01.2001 -
Dercová Katarína	Czecho-Slovak Society for Microbiology	member	01.01.1987
Malík Fedor	Editorial boards of journal Vinič a víno.	presidentmember	01.01.2001 -

Slugeň Dušan	Slovak Society for Agriculture, Forestry, Food and Veterinary Sciences	Member	01.01.1987 -
Šajbidor Ján	Slovak Society for Agriculture, Forestry, Food and Veterinary Sciences	Member	01.01.1987 -
Šmogrovičová Daniela	Czecho-Slovak Society for Microbiology	Member	01.01.1979 -

D. Membership in International Organisations and Societies

Name	Organisation or Society	Position	Valid date
Čertík Milan	The American Oil Chemist's Society	member	01.01.1994
Čertík Milan	The European Federation of Biotechnology	member	24. 09.2003 -
Dercová Katarína	The European Federation of Biotechnology	member	26.3.2002
Malík Fedor	Editorial boards of the journal Kvasný prům.	member of advisory	01.01.1985 -
Malík Fedor	Editorial boards of journal Mitteilungen Klosterneuburg, Wien	member	01.01.2003 -
Šmogrovičová Daniela	European Brewing Convention Brewing Science Group	member	01.12.1998 -
Šmogrovičová Daniela	Editorial boards of the journal Kvasný prům.	member of advisory	01.01.1999 -

E. Visitors from Abroad

Name	Organisation or Institution	State	Date / Duration
Čepička Jaroslav	University of Chemical Technology, Prague	Czech Republic	November 2004 (2 days)
Šeruga Marijan	J.J.Strossmayer University in Osijek, Osijek	Croatia	September 2004 (10 days)

F. Visits of Staff Members and Postgraduate Students in Foreign Institutions

Name	Organisation / Institution / Conference	State	Date / Duration
Čertík, M.	Michigan State University (East Lansing, Michigan)	USA	11.09.2004 – 17.09.2004
Čertík, M.	Cornell University (Ithaca, New York)	USA	18.09.2004 – 20.09.2004
Čertík, M.	United States Department of Agriculture (Washington, D.C)	USA	21.09.2004 – 24.09.2004
Čertík, M.	National Center for Agricultural Utilization Research, ARS, USDA, Peoria, Illinois	USA	25.09.2004 – 16.11.2004
Čertík, M.	Archer Daniels Midland Company (ADM), Decatur, Illinois	USA	05.11.2004
Čertík, M.	23rd Congress on the Czechoslovak Society for Microbiology, Brno	Czech Republic	06.09.2004-09.09.2004
Čertík, M.	36th Annual Great Lakes Regional Meeting of the American Chemical Society, Peoria, Illinois	USA	17.10.2004-20.10.2004
Dercová, K.	A Pan European Perspectives, SETAC Europe 14th Annual Meeting, Praha	Czech Republic	18.04.2004-22.04.2004
Dercová, K.	23rd Congress on the Czechoslovak Society for Microbiology, Brno	Czech Republic	06.09.2004-09.09.2004
Firáková, S.	Tomasek days 2004. XIII. Conference of young microbiologists, Brno	Czech Republic	02.06.2004-06.06.2004
Firáková, S.	56th Meeting of the Chemical Societies, Ostrava	Czech Republic	06.09.2004-09.09.2004
Křištofiková, L.	Business trip, Mega.a.s, Stráž pod Rálskem	Czech Republic	19.02.2004
Kundříková, K.	Tomasek days 2004. XIII. Conference of young microbiologists, Brno	Czech Republic	02.06.2004-06.06.2004
Malík, F.	VINOVITA 2004 (int. wine concurs),Zagreb,	Croatia	03.02.2004-08.02.2004
Malík, F.	Vinalies International (int. wine exhibition), Paris	France	12.02.2004-18.02.2004

Malík, F.	VINAGORA Botrytis (int. wine concurs), Tarcal	Hungary	05.03.2004-07.03.2004
Malík, F.	XI: Concours Mondial de Bruxelles,	Belgium	14.04.2004-18.04.2004
Malík, F.	VINO LUBLJANA (int. wine concurs), Ljubljana	Slovenia	29.05.2004-02.06.2004
Malík, F.	MUNDUS VINI (int. wine concurs), Neustadt	Germany	03.09.2004-06.09.2004
Malík, F.	VINAGORA (int. wine concurs), Budapest	Hungary	18.12.2004
Selecký, R.	University of Ljubljana, Biotechnical faculty, Ljubljana	Slovenija	01.06.2004 – 01.07.2004
Selecký, R.	56th Meeting of the Chemical Societies, Ostrava	Czech Republic	06.09.2004-09.09.2004
Sláviková, L.	Tomasek days 2004. XIII. Conference of young microbiologists, Brno	Czech Republic	02.06.2004-06.06.2004
Slugeň, D.	23rd Congress of Czechoslovak Society for Microbiology, Brno	Czech Republic	06.09.2004-09.09.2004
Šajbidor, J.	ESAC meeting, JRC Ispra	Italy	05.07.2004-06.07.2004
Šajbidor, J.	Universita Krakow (Bilateral agreement FCHPT- Univ. Krakow)	Poland	14.10.2004-16.10.2004
Šajbidor, J.	ISEKI meeting, Nantes, (project Erasmus 104934 CP, Harmonisation of the studies in Food Sciences and Engineering in Europe)	France	01.12.2004-04.12.2004
Šmogrovičová, D.	23rd Congress of Czechoslovak Society for Microbiology, Brno	Czech Republic	06.09.2004-09.09.2004
Šmogrovičová, D.	32nd Symposium on Brewing and Malting, Plzeň	Czech Republic	12.10.2004-14.10.2004
Šmogrovičová, D.	CEEPUS H-158 Network coordination meeting, Budapest	Hungary	25.11.2004-26.11.2004
Valach, M.	56th Meeting of the Chemical Societies, Ostrava	Czech Republic	06.09.2004-09.09.2004
Valach, M.	Tomasek days 2004. XIII. Conference of young microbiologists, Brno	Czech Republic	02.06.2004-06.06.2004
Voštiar, I.	ESBES 5, Stuttgart	Germany	08.09.2004-11.09.2004
Voštiar, I.	BIOSENSORS 2004, Granada	Spain	24.05.2004 – 26.05.2004
Voštiar, I.	University of Liverpool, Liverpool	G.Britain	10.10.2004-12.10.2004

VII. THESES AND DISSERTATIONS

A. Graduate Theses (Bc Degree) for state examinations after three years of study

Name	Title of Thesis	Supervisor
Cibíková, P.	Bioactive Hydroxylated Aromatic Secondary Metabolites of Microorganisms	Šturdíková, M.
Čičmanová, J.	Elimination of Pentachlorophenol (PCP) from Contaminated Soil by Means of its Sorption on Organomineral Complexes	Dercová, K.
Garstková, Z.	Application Possibilities of Biosensor in Ethanol Fermentation Monitoring	Brygin, M.
Gašparovičová, J.	Application Possibilities of Biosensor in Ethanol Fermentation Monitoring	Valach, M.
Hanusová, V.	Study of Adaptable Properties of Carotenogenic Yeasts under Stress Conditions	Čertík, M.
Chomisteková, K.	Biotechnological Possibilities of Preparation of Bioactive Secondary Metabolites	Brygin, M.
Kmecová, K.	Biotechnological Production of Carotenoids and their Application	Čertík, M.
Lengyelová, L.	Preparation of Bioproducts Containing Biologically Active Lipids by Solid State Fermentation of Filamentous Fungi	Čertík, M.
Lobpreis, T.	Use of the Passive Samplers (SPMD) for Monitoring of Organic Contaminants in Water	Dercová, K.
Marková, Z.	Preparation and Isolation of Recombinant Proteins	Čertík, M.
Petrušáková, Z.	Alternatives of Biotechnological Production of Secondary Metabolites	Brygin, M.
Siváková, Z.	Isolation of Osmophile and Ethanol Tolerant Yeast from the Secondary Habitats	Malík, F.

Strieženeč, V.	Malo-lactic Fermentation in the Wines of 2003 Vintage	Malík, F.
Šeligová, J.	Contamination of Environment and Human Population with Persistent Organic Pollutants	Dercová, K.
Šipöcz, M.	Stress Factor Studying of Zymomonas mobilis Bacteria during Ethanol Fermentation	Rebroš, M.
Tereni, M.	Influence of Beer Aging on its Stability	Šmogrovičová, D.
Vajdová, Z.	Innovation Trends in the Biotechnology Ethanol Production	Valach, M.

B. Graduate Theses (MS Degree) for state examinations after five years of study

Name	Title of Thesis	Supervisor
Borodovčáková, N.	Development of New Lipid Derivatives	Čertík, M.
Bronišová, Ž.	Study of Adaptation Properties of Carotenogenic Yeasts Grown under Heavy Metals	Čertík, M.
Cvengrošová, B.	Microbial Production of Conjugated Fatty acids	Rosenberg, M.
Dlhoš, M.	Physiology of Brewer's Yeast in Stress Conditions	Šmogrovičová, D.
Drabantová, M.	The influence of Fermentation Conditions on Low-alcoholic Beer Production	Šmogrovičová, D.
Dvorská, E.	Statistical Characteristic of Sparkling Wine	Malík, F.
Galbavý, D.	Production of Secondary Metabolites with Immobilized and Suspended Strains of Microorganisms	Valach, M.
Holeková, M.	Effect of Fermentation Conditions to Production of Ethanol Using Immobilized Yeasts	Valach, M.
Hříbková, A.	Selection of Wine Yeasts	Malík, F.
Lukáčiková, L.	Production of Bioactive Compounds by Endophyte from Plant of Magnoliaceae Family	Šturdíková, M.
Matúšková, E.	Development of Biosensor for Monitoring of Glycerol	Šturdík, E.
Migrová, D.	Malo-lactic Fermentation Modelling in Slovak Wines	Slugeň, D.
Mikulášová, L.	Comparison of Raw Materials used for Fuel Ethanol Production by Means of Immobilization Technologies	Valach, M.
Mikulová, L.	Selection of Brewer's Yeasts for Low-alcoholic Beer Production	Šmogrovičová, D.
Mlichová, Z.	Ethanol Production by Bacteria Zymomonas mobilis encapsulated to PVA Gel	Rosenberg, M.
Sejáková, Z.	Toxicity, Biodegradation and Sorption of Pentachlorophenol	Dercová, K.
Spurná, O.	Effect of Cultivation Conditions on Microbial Production of Astaxanthin	Čertík, M.
Trúchla, L.	Possibilities of Continual Production of Ethanol from Whey with Application of Immobilized Microorganisms	Šturdík, E.

C. Dissertations (PhD)

Name	Title of Thesis	Supervisor
Cvengroschová, M.	Optimization of Wort Preparation Technology for Subsequent Fermentation Process	Šmogrovičová, D.
Maliar, T.	Molecular bioengineering of pharmaceutically interesting inhibitors of patophysiological proteinases	Šturdík, E.
Šepeľová, G.	Influence of Technology Factors on Yeast Fermentation Activity	Šmogrovičová, D.
Voštiar, I.	Monitoring of Intracellular Proteins during the Heterologous Production in E. coli using Surface Plasmon Resonance Detection	Šturdík, E.

VIII. PUBLICATIONS

Books, Chapters in monographs

- [1] Malík, F.: 100 najlepších slovenských vín. Vydavateľstvo PT Bratislava, 2004, 160 s.
- [2] Malík, F.: Víno na tanieri. Vydavateľstvo PT Bratislava, 2004, 152 s.
- [3] Príbela, A., Malík, F., Pokorný, J., Tomášek, K.: Sensory evaluation of wine, non-alcoholic wine beverages and wine distillates. FCHPT STU Bratislava, 2004, učebné texty pre kurz. 93 s.
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- [3] Cvengroschová, M., Šmogrovičová, D.: Wort preparation and its influence to fermentation and beer properties *Kvasny Prum* 50 (3) 69 – 74, 2004
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DEPARTMENT OF BIOCHEMISTRY AND MICROBIOLOGY

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Technical staff:
Eva Drobná-Secretary; Dagmar Adamíková; Margita Kosárová; Ján Škvara; Eva Sameková

II. TEACHING AND RESEARCH LABORATORIES

A. Teaching laboratories:

Laboratory of Animal Cell Cultures
Laboratory of Biochemistry of Cancer Cells
Laboratory of Fungal Biochemistry and Physiology
Laboratory of Immunochemistry
Laboratory of Microbiology

B. Research laboratories:

Laboratory of Animal Cell Cultures
Laboratory of Biochemistry of Cancer Cells
Laboratory of Fungal Biochemistry and Physiology
Laboratory of Immunochemistry
Laboratory of Microbiology

III. TEACHING

A. Undergraduate Study:

1. semester (Bc)	Biology	2/0/0	Jantová, Mikulášová
	Laboratory Practices in Biology	0/0/1	Olejníková, Birošová, Šovčíková, Letašiová, Theiszová
1. semester (Bc)	Microbiology I	2/0/0	Hudecová
	Laboratory Practices in Microbiology I	0/0/2	Hudecová, Mikulášová, Kaliňák
1. semester (Bc)	Biochemistry I	2/0/0	Varečka
	Laboratory Practices in Biochemistry I	0/0/2	Paulíková, Lakatoš, Šimkovič, Hudec, Kaliňák
1. semester (Bc)	Principles of Human Nutrition	2/0/0	Miko
1. semester (Bc)	Laboratory Project	0/0/4	Miko, Varečka, Hudecová, Jantová, Mikulášová, Paulíková
1. semester (Bc)	Biochemistry II	2/0/2	Varečka, Paulíková, Hudec, Šimkovič,
	Microbiology II	2/0/2	Hudecová, Mikulášová, Kaliňáková, Olejníková
	Immunochemistry	2/1/2	Šovčíková, Hudec

	Laboratory project I	0/0/5	Miko, Paulíková, Varečka, Hudecová, Jantová, Mikulášová
1. semester (Bc)	Molecular Biology and Genetics	2/1/0	Mikulášová, Paulíková, Čertík
	Applied Microbiology	2/0/0	Hudecová
	Bioenergetics	2/0/2	Miko
	Mechanisms of Action of Natural Compounds	2/0/2	Varečka, Šimkovič, Pokorný, Kaliňáková
1. semester (Bc)	Laboratory project II	0/0/5	Miko, Paulíková, Varečka, Hudecová, Jantová, Mikulášová
1. semester (Bc)	Genetic Manipulations	2/2/0	Čertík
	Clinical Biochemistry	2/0/0	Varečka, Lakatoš
	Clinical Biochemistry-Laboratory Practices	0/0/2	Lakatoš, Šimkovič
	Cell cultures	2/0/2	Jantová
1. semester (Bc)	Laboratory project III	0/0/5	Miko, Horáková, Varečka, Hudecová, Jantová, Mikulášová
	Lab. Practices of the branch Biomedical Engineering	0/0/2	Miko, Horáková, Varečka, Hudecová, Jantová, Mikulášová
1. semester (Bc)	Master's Thesis	0/0/2 7	Miko, Paulíková, Varečka, Hudecová, Jantová, Mikulášová

IV. CURRENT RESEARCH PROJECTS

VEGA Project No 1/1173/04 Cytotoxicity of novel xenobiotics and their mode of action (Soňa Jantová)

The overall aim of the project is to develop the new potential anticancer drug. Therefore the cytotoxic, genotoxic and antimicrobial properties of the chemical compounds of the different structure will be evaluated. Special attention will be focused to the mechanism of the action and the cytotoxic activity of chosen most active derivatives of oracine, organic ammonium salts, Cu⁺⁺ complexes, ITC and quinazolines; notably the interference on the biosynthesis of macromolecules, the interference with the cell cycle, their ability to induce apoptosis in different tumor cell lines as well as the influence actin cytoskeleton and the intracellular pH. The series of phenolic compounds and polyphenolic lignin derivatives will be investigated from the view point of their antimutagenic, antioxidative and adsorptive effect. The mechanism of these effects will be studied. Modulation of glutathion metabolism can provide a strategy for more efficacious sensitization of tumor cells to a standard anticancer drugs (doxorubicin) in chemotherapy and anticancer activity of new modulators of glutathione relative enzyme will be investigated.

Project duration: from 1. 1. 2004 to 31.12. 2006

VEGA Project No 1/0109/03 Transport processes in filamentous fungi and their adaptative mechanisms (Ludovít Varečka)

In the project devoted to study the transport processes in filamentous fungi several aspects of transport and physiology were studied. In *Trichoderma viride* the process of chloride transport was studied by means of ³⁶Cl radionuclide. It was found that chloride anions enter the vegetative mycelia in a saturatable, pH- and temperature-dependent manner with selectivity for chlorides and bromides. Further properties of transport suggest that chloride anions are transported by a specific and electrically silent transport protein. In *Penicillium simplicissimum* the process of citrate transport into the vegetative mycelia has been described and the conditions were found which led to the induction of novel citrate uptake system driven by protonmotive force. Its role in the citrate metabolism is being currently analysed.

Project duration: from 01.01.2003 to 31.12.2005

VEGA Project No 2/3188/23 Characterisation of basal transport of Ca²⁺ in non-excitible cells (Ludovít Varečka)

The main goal of the project is to prove or disprove the existence of the carrier in mediating the inward basal passive Ca²⁺ transport and to find out whether this process proceeds using and electrogenic or electroneutral mechanism. Further goals of the project is to find out information about factors which determine the magnitude of the basal Ca²⁺ influx, particularly, to find out whether it responds to the immediate conditions, or it is predetermined by (genetic) mechanisms.

Project duration: from 01.01.2003 to 31.12.2005

Bilateral Cooperation Austria-Slovakia - Membrane transport of organic acids in filamentous fungi (Ľudovít Varečka)

This project is a continuation and expansion of our previous collaboration, where we investigated citrate uptake in *P. simplicissimum*. Additionally, this project is carried out in collaboration with the Austrian Science Fund Project P 15491 ("Energetics of citrate transport through the plasma membrane of *Penicillium simplicissimum*. A study using plasma membrane vesicles"). The aims of this proposal are: 1.) To study the induction of high affinity uptake systems for pyruvate, citrate, 2-oxoglutarate and succinate in *Trichoderma viride*, *P. simplicissimum*, *Beauveria brongniartii* and *Aspergillus nidulans*. 2.) To improve and validate the measurement of the plasma membrane potential using di-S-C3(3) or di-S-C3(5) in *T. viride*, *P. simplicissimum*, *B. brongniartii* and *A. nidulans*. 3.) To measure the PMF using method above and a method to determine the proton gradient. 4.) To find out if the induction of these uptake systems is accompanied by a change in the proton motive force and by an increased expression on the plasma membrane H⁺-ATPase

Project duration: from 01.06.2003 to 31.5.2004

VEGA Project No 1/9247/02 New coordinating compounds of zinc, their preparation, study of physico-chemical properties and their biological activity (Daniela Hudcová)

The main goal of this project is the preparation of new coordinating compounds of zinc binding the molecules of ligands with predicted biological activity with emphasis on the study of their physico-chemical properties (spectroscopic and thermic properties, structure and stability in solutions) and their biological activity. In the frame of project is selected wide scale of complexes of zinc from the reason of their perspective using in the pharmacy, food and cosmetic industry.

Project duration: from 01.01.2002 to 31.12.2004

V. CURRENT EDUCATION PROJECTS

VI. COOPERATION

A. Cooperation in Slovakia

Institution	Type of cooperation	Responsible person	Duration
Institute of Molecular Physiology and Genetics, SAS, Bratislava	Characterisation of basal Ca ²⁺ transport in non-excitabile cells (Joint grant)	Dr. Jozef Orlický, Senior Research Scientist, Vlárská 5, 833 34 Bratislava	01.01.1990 -
Cancer Research Institute, SAS, Bratislava	Cytotoxicity of Novel Xenobiotics and Their mode of Action	Dr. Darina Slameňová, Head of Group, Vlárská 7, 833 91 Bratislava	01.01.1991 -
Tissue Bank, Hospital Ružinov, Bratislava	Cultivation and growth of human and animal tissue cultures on new biomaterials	Dr. Jana Dragúňová, Ružinovská 6, 826 06 Bratislava	01.01.1998 -
Dept. of Chem. Theory of Drugs, Fac. of Pharmacy, Comenius University, Bratislava	Study of antimicrobial activity of newly synthesized copper complexes	Dr. Aladár Valent, Associate professor, Kalinčiaková 8, 832 32 Bratislava	01.01.1999 -
Institute of Chemistry, Faculty of Science, PJŠU, Košice	New coordinating compounds of zinc, their preparation, study of physico-chemical properties and their biological activity (Joint grant)	Prof. Katarína Gyoryová, Full Professor, Moyzesova 11, 040 01 Košice	01.10.2001 -
Institute of Chemistry, SAS, Bratislava	Preparates for biological protection of plants on <i>Trichoderma</i> fungus basis (Joint grant)	Dr. Vladimír Farkaš, Senior Research Scientist, Dúbravská cesta 9, 845 38 Bratislava	01.01.2001 -

B. International Cooperation

Institution	Type of cooperation	Responsible person	Duration
Laboratoire du Biomembranes et Messagers Cellulaires, Orsay	Apoptosis in dexamethasone treated murine thymocytes	Dr. Françoise Giraud, Director of Research, BMC CNRS - UMR 8619, Bat.440 Université Paris XI, Orsay 914 05, France	01.01.2000 -
Institute of cellular and molecular botany, Friedrich Wilhelms Universität, Bonn	Characterisation of microorganisms indigenous to low-rank coal, study of solubilisation of lignite by these microorganisms	Dr. Udo Hoelker, Head of group, Kirschallee 1, 53 115 Bonn, Germany	01.01.2001 -
Institut für Mikrobiologie, Universität zu Innsbruck	Membrane transport of organic acids in filamentous fungi (Joint grant)	Dr. Wolfgang Burgstaller, Head of Group, Technikerstrasse 25, 6020 Innsbruck, Austria	01.01.2002 -
Institute of Food Research, Norwich	Rapid, specific detection of <i>Listeria monocytogenes</i> by antibody-based techniques and on-line sensor technology	Dr. Gary Wyatt, Senior Research Scientist, Norwich Research Park, Colney, NR47UA - Norwich, Great Britain	01.01.1997 -
Institute of Chemical Technology, Prague	Rapid, specific detection of <i>Listeria monocytogenes</i> by antibody-based techniques and on-line sensor technology	prof. Pavel Rauch, Head of Department, Technická 5, 166 28 Prague, Czech Republic	01.01.1997 -

C. Membership in Domestic Organizations and Societies

Name	Organisation or Society	Position	Valid date
Miko Milan	Slovak Society for Biochemistry and Molecular Biology, Bratislava	member	
Miko Milan	Editorial board of journal <i>Biológia</i>	member	
Miko Milan	Editorial board of journal <i>Acta fytotechnica et zootechnica</i>	member	
Miko Milan	Commission for evaluation of DrSc (DSc) thesis in Biochemistry	member	
Hudecová Daniela	Czecho-Slovak Society for Microbiology, Bratislava	member	01.01.1984 -
Hudecová Daniela	Scientific grant agency (VEGA)– Commission for cell and molecular biology , Bratislava-	member	30.04.2002 -
Hudecová Daniela	Commission for evaluation of PhD thesis in Microbiology	secretary	20.10.1997 -
Jantová Soňa	Slovak Medical Society, Bratislava	member	01.01.1980 -
Jantová Soňa	Slovak Society for Biochemistry and Molecular Biology, Bratislava	member	01.01.2002 -
Jantová Soňa	Scientific grant agency (VEGA)– Commission for cell and molecular biology	member	30.04.2002 -
Mikulášová Mária	Czecho-Slovak Society for Microbiology, Bratislava	member	01.07.1992 -
Mikulášová Mária	Czecho-Slovak Society for Biology, Brno	member	01.01.1993 -
Varečka Ľudovít	Editorial Board of journal <i>General Physiology and Biophysics (GPB)</i>	member	01.01.1993 -
Varečka Ľudovít	Slovak Society for Biochemistry and Molecular Biology, Bratislava	member of advisory board	01.10.1996 -
Varečka Ľudovít	Scientific board of Institute of molecular physiology and genetics SAS, Bratislava	member	01.01.2001 -
Lakatoš Boris	Slovak Society for Biochemistry and Molecular Biology, Bratislava	member	01.01.2002 -
Andrea Šovčíková	Slovak Society for Biochemistry and Molecular Biology, Bratislava	member	01.01.2003 -
Martin Šimkovič	Slovak Society for Biochemistry and Molecular Biology, Bratislava	member	01.01.2002 -

D. Membership in International Organisations and Societies

E. Visitors from abroad

Name	Organisation or Institution	State	Date / Duration
Daussant, J.	C.N.R.S., Meudon	France	November 2004 (5 days)

F. Visits of Staff Members and Postgraduate Students in Foreign Institutions

Name	Organisation / Institution / Conference	State	Date / Duration
Hudec, R.	University of Padova	Italy	March-June 2004 (90 days)
Hudec, R.	EMBO Workshop on Calcium signaling and disease, Capri	Italy	20. - 23. 9. 2004
Hudec, R.	International Symposium on Calcium in Health and Disease, Rovaniemi	Finland	5. - 7. 7. 2004
Hudec, R.	FEBS Forum for Young Scientists, Warsaw	Poland	24.-26. 6. 2004
Hudec, R.	29th Meeting of the Federation of the European Biochemical Societies, Warsaw	Poland	26.6. - 1.7. 2004
Varečka, L.	XIX. Meeting of Czech and Slovak Societies for Biochemistry and Molecular Biology, Olomouc	Czech Republic	31.8.-3.9. 2004
Šimkovič, M.	XIX. Meeting of Czech and Slovak Societies for Biochemistry and Molecular Biology, Olomouc	Czech Republic	31.8.-3.9. 2004
Miko, M.	XIX. Meeting of Czech and Slovak Societies for Biochemistry and Molecular Biology, Olomouc	Czech Republic	31.8.-3.9. 2004
Letašiová, S.	18th Meeting of the European Association for Cancer Research, Innsbruck	Austria	3.- 5. 7. 2004
Olejníková, P.	Institut für Mikrobiologie, Universität zu Innsbruck	Austria	7.1.2004- 28.1.2004
Olejníková, P.	Institut für Mikrobiologie, Universität zu Innsbruck	Austria	August 2004 (30 days)
Olejníková, P.	23rd. Meeting of czecho-slovak microbiological society, Brno	Czech Republic	6.9.-9.9.2004
Letašiová, S.	International Conference „Using Science to Solve Environmental Health problems...“, Praha	Czech Republic	24.-27.10.2004
Letašiová, S.	XIX. Meeting of Czech and Slovak Societies for Biochemistry and Molecular Biology, Olomouc	Czech Republic	31.8.-3.9. 2004
Hunová, M.	University of Ghent	Belgium	1.1.2004- 31.8.2004
Kaliňák, M.	Institut für Mikrobiologie, Universität zu Innsbruck	Austria	January-February 2004 (50 days)

VII. THESES AND DISSERTATIONS

A. Graduate Theses (Bc Degree) for state examinations after three years of study

Name	Title of Thesis	Supervisor
Csoroszová, E.	New antiinflammation nitrobenzoate-copper (II) complexes and their effects on cause of some mycotic diseases	Hudecová, D.
Farkašová, E.	Induction of proteolytic enzymes in <i>Saccharomyces cerevisiae</i>	Varečka, L.
Grznárová, P.	Biological activity of berberine and its derivatives	Letašiová, S.
Hamranová, A.	Cytochromes P450 and metabolism of xenobiotics	Miko, M.
Chromá, M.	Ability of antimutagenes to decrease onset of resistance against antibiotics	Mikulášová, M.
Kadlečíková, E.	Study of anticancer effects of Cu - complexes	Paulíková, H.
Moravčíková, E.	Bioactivity of phytoalexines	Paulíková, H.
Neubauerová, E.	Possibilities of sensitivity improvement of immunochemical methodes for detection of <i>Listeria monocytogenes</i>	Šovčíková, A.
Ondrušová, L.	Antibacterial activity of new derivatives of vazocine analogue	Jantová, S.
Vaneková, M.	Properties of anion channel of human erythrocytes	Hudec, R.

Name	Title of Thesis	Supervisor
Záhoranová, L.	Mitochondria in Alzheimer disease	Miko, M.
Žbodáková, O.	Glutathione and oxidative stress	Paulíková, H.

B. Graduate Theses (MS Degree) for state examinations after five years of study

Name	Title of Thesis	Supervisor
Birošová, L.	The study of endogenous and exogenous factors affecting the mutation leading to antibiotic resistance	Mikulášová, M.
Čelináková, Z.	Modulation of glutathione metabolism in erythrocytes and erythroidal cell line K562	Paulíková, H.
Dubeková, K.	Indol-isothiocyanates – reactivity and anticancer properties	Paulíková, H.
Dzajak, R.	Identification of tissue specific alternative splicing of mRNA CA9	Pastoreková, S.
Ergang, P.	One-cell gel electrophoresis (comet assay) for monitoring of modulatory properties of selected syntetic compounds	Đuračková, Z.
Fabinyová, L.	Metabolic changes during the germination of fungal conidia under the conditions of limiting nutrients	Kaliňák, M.
Lakomá, J.	Screening and mode of action of nitrobenzoatecopper (II) complexes	Miko, M.
Majerníková, K.	Developmental changes in enzyme activities involved in energetic and nitrogen metabolism in filamentous fungi	Varečka, L.
Ondrušová, Z.	Copper (II) complexes with Schiff bases as biological active compounds	Hudecová, D.
Ovádek, R.	Anticancer and antimicrobial effect of triazolochinasolines in in vitro conditions	Jantová, S.
Polláková, M.	Effects of copper complexes on the cell	Kaliňáková, B.
Porubovičová, R.	Effect of new bisammonium salts on Salmonella infantis and Salmonella montevideo	Majtán, V.
Strnádel, J.	Modulation of signal pathways in human hematopoietic neoplastic cell lines by isothiocyanates	Sedlák, J.
Szabóová, M.	Molecular biological analysis of strains Salmonella enteritidis isolated from different sources	Majtán, V.
Theiszová, M.	Biological activity of selected heterocyclic nitrogen compounds	Jantová, S.
Vařková, Z.	Derivatives of N-salicylidene-glutamate-copper (II) complex – study of redox activity and antiproliferative compounds	Paulíková, H.
Vargovič, P.	Changes of activity and expression of enzymes related to the activation of Trichoderma viride conidiation by light and senescence	Pokorný, R.

C. Dissertations (PhD)

Name	Title of Thesis	Supervisor
Pokorný, R.	Transport and regulation processes related to the growth and differentiation of filamentous fungi	Hudecová, D.

F. Inauguration Theses

Name	Title of Thesis	Head of board
Varečka, L.	Two short stories about life	Báleš, V.

VII. PUBLICATIONS

CC publications

- [1] Čipák, L., Paulíková, H., Novotný, L., Jarošová, M., Rauko, P.: Potentiation of doxorubicin-induced apoptosis and differentiation by indomethacin in K-562 leukemia cells. *Neoplasma* 51(3), 188-92 (2004)
- [2] Hudec, R., Lakatoš, B., Kaiserová, K., Orlický, J., Varečka, L.: Properties of the basal calcium influx in human red blood cells. *Biochim Biophys Acta.* 1661(2), 204-11 (2004)
- [3] Hudec, R., Lakatoš, B., Orlický, J., Varečka, L.: Reconstitution of the basal calcium transport in resealed human red blood cell ghosts. *Biochem Biophys Res Commun.* 325(4), 1172-9 (2004)
- [4] Jantová, S., Theiszová, M., Mikulášová, M.: Cytotoxic and genotoxic effects of some substituted tetrazolo[1,5-c]quinazolines. *Neoplasma* 6, 437-442 (2004)

- [5] Kettmann, V., Košťálová, D., Jantová, S., Černáková, M., Drimal, J.: In vitro cytotoxicity of berberine against HeLa and L1210 cancer cell lines. *Pharmazie* 59(7), 548-51 (2004)
- [6] Lépine, S., Lakatoš, B., Courageot, MP., Le Stunff, H., Sulpice, JC., Giraud F.: Sphingosine contributes to glucocorticoid-induced apoptosis of thymocytes independently of the mitochondrial pathway. *J Immunol.* 173(6), 3783-90 (2004)
- [7] Moncol, J., Kaliňáková, B., Švorec, J., Kleinová, M., Koman, M., Hudecová, D., Melník, M., Mazúr, M., Valko, M.: Spectral properties and bio-activity of copper(II) clofibrates, part III: crystal structure of Cu(clofibrate)₂(2-pyridylmethanol)₂, Cu(clofibrate)₂(4-pyridylmethanol)₂(H₂O) dihydrate, and Cu₂(clofibrate)₄(N,N-diethylnicotinamide)₂ *Inorganica Chimica Acta* 357, 3211-3222 (2004)
- [8] Pokorný, R., Hudecová, D., Burgstaller, W., Varečka L.: Changes in properties of glutamate transport in *Trichoderma viride* vegetative mycelia upon adaptation to glutamate as carbon source. *FEMS Microbiol Lett.* 230(1), 123-8 (2004)
- [9] Segfa, P., Mikloš, D., Olejníková, P., Kaliňáková, P., Hudecová, D., Palicová, M., Švorec, J., Valko, M., Melník, M., Glowiak, T.: Copper(II) pyridinecarboxylate adducts with chelating ligands as potential antimicrobial agents *Inorganica Chimica Acta* 357, 4172-4180 (2004)
- [10] Šimkovič, M., Frerman, F.E.: Alternative quinone substrates and inhibitors of human electron-transfer flavoprotein-ubiquinone oxidoreductase. *Biochem J.* 378(Pt 2), 633-40 (2004)
- [11] Šimkovič, M., Pokorný, R., Hudecová, D., Varečka, L.: Chloride transport in the vegetative mycelia of filamentous fungus *Trichoderma viride*. *J Basic Microbiol.* 44(2), 122-8 (2004)
- [12] Valent, A., Kohútová, M., Švajlenová, O., Hudecová, D., Olejníková, P., Melník, M.: N-salicylidene - L-glutamato-copper(II) complexes and their antimicrobial effects. *J. Coord. Chem.* 57, 1279-1285 (2004)

Publications registered in CA, FSTA and other ISI databases

- [1] Kandárová, H., Jantová, S., Hojerová, J.: New approaches to evaluation of a toxicological profile of cosmetic products and their components. *Česko-slovenská dermatologie*, 79, 2, 75-83 (2004) (Index Medicus and Medline)

Other publications

- [1] Brtko, J., Rondahl, L., Ficková, M., Hudecová, D., Eybl, V., Uher, M.: Kojic acid and its derivatives: history and present state of art. *Cent Eur J Public Health.* 12 Suppl:S16-8 (2004)
- [2] Slugeň, D., Migrová, D., Kaliňák, M., Malík, F.: Small Carpathian wines year 2003 and the role of malic-lactic fermentation Vinič a víno 5, príloha 4-7 (2004)

Text books

- [1] Černáková, L., Kováčik, D., Mikulášová, M., Mikula, M., Buček, A., Černák, M*: Low-cost plasma activation and chitosan immobilization onto polypropylene nonwovens In: Proceedings of 14th Annual international TANDEC Nonwovens Conference, The University of Tennessee, Knoxville, November 9-11. 2004, CD 2.6-1 - 2.6-8 (Pr)
- [2] Černáková, L*, Kováčik, D., Mikulášová, M., Záhoránová, A., Černák, M.: Chitosan immobilization onto the atmospheric-pressure plasma-functionalized polypropylene nonwoven fabrics. In: Book of Abstract and Program: HAKONE IX, Ninth International Symposium on High Pressure, Low Temperature Plasma Chemistry, Padova, 23.-27. 8. 2004 (Pr)
- [3] Augustín, J.*, Hudecová, D.: Antimicrobial activity of powdered tea leaves (*Camelia sinensis*) and their hot-water extracts. In: 23. Kongres československé společnosti mikrobiologické, 6.9.-9.9.2004 Brno (ČR). Bulletin čs.společnosti mikrobiologické ISSN 0009-0646 - Abstrakty. s. 128, (Po)
- [4] Hudec, R.*, Lakatoš, B., Orlický, J., Varečka, L.: Properties of the basal calcium influx in human red blood cells In: EJB 271 (Supplement 1), 189-190 (2004), Abstracts of the 29th Meeting of the European Biochemical Societies, 26 June - 1 July 2004 Warsaw (Poland), p. 189-190, (Po)
- [5] Hudec, R.*, Lakatoš, B., Orlický, J., Varečka, L.: Properties of the basal calcium influx in human red blood cells In: FEBS Forum for Young Scientists, 24-26 June 2004 Warsaw (Poland), p.19 (Po)
- [6] Hudec, R.*, Lakatoš, B., Orlický, J., Varečka, L.: Resealed human red blood cells ghosts: tool for studying basal calcium influx In: EMBO Workshop on Calcium signaling and disease, 20-23 September 2004, Capri (Italy), p.69 (Po)
- [7] Hudecová, D.*, Bernovská, V., Olejníková, P., Kaliňáková, B., Gyoryová, K.: Carboxylate-zinc(II) complexes and their antimicrobial activity In: 23. Kongres československé společnosti mikrobiologické, 6.9.-9.9.2004 Brno (ČR). Bulletin čs.společnosti mikrobiologické ISSN 0009-0646 - Abstrakty. s. 179, (Po)
- [8] Hudecová, D.*, Ondrušová, Z., Olejníková, P., Kaliňáková, B., Valent, A., Kohútová, M., Melník, M.: Copper(II) complexes of Schiff's bases as a biologically active compounds In: 23. Kongres československé společnosti mikrobiologické, 6.9.-9.9.2004 Brno (ČR). Bulletin čs.společnosti mikrobiologické ISSN 0009-0646 - Abstrakty. s. 180, (Po)
- [9] Lakatoš, B., Hudec, R.*, Orlický, J., Varečka L.: Complexity of the calcium influx regulation in human red blood cells. In: International Symposium on Calcium in Health and Disease, Book of abstracts, Rovaniemi (Fin), July 5-7., 2004, Eds.: Saris, Westermack, Carafoli, Atroshi, Finnish Society for Biological Medicine, p. 44, ISBN 951-98382-8-7 (Po)
- [10] Letašiová, S.*, Jantová, S., Horváthová, M., Lakatoš, B.: In vitro antiproliferative activity and the mechanism of action of berberine In: International Conference „Using Science to Solve Environmental Health problems; recognizing the Importance of tomorrow's leaders to identify appropriate solutions“. Prague (ČR), October 24-27 2004, pp. 29-30. (Po)
- [11] Letašiová, S.*, Miko, M., Melník, M., Valigura, D.: Halogenosalicylate-copper(II) complexes - new cytotoxic agents In: 18th Meeting of the European Association for Cancer Research, Innsbruck (Austria), 3-6 July 2004, p. 318 (Po)

- [12] Letašiová, S.*, Miko, M., Melník, M., Valigura, D.: Mode of action of cytotoxic active halogenosalicylatecopper(II) complexes In: Proceedings of the XIX. Meeting of Czech and Slovak Societies for Biochemistry and Molecular Biology, Olomouc (ČR) 31.8.-3.9. 2004, Ed.: Frébort, Walterová, pp. 220-221, ISBN 80-244-0882-1, (Po)
- [13] Letašiová, S.*, Ovádeková, R., Jantová, S.: Cytotoxicity and apoptosis induced by 5-morpholin-4-yl-3-(5-nitrothien-2-yl)[1,2,4]triazolo [4,3-c]quinazoline in leukemic cell line L1210 In: Proceedings of the XIX. Meeting of Czech and Slovak Societies for Biochemistry and Molecular Biology, Olomouc (ČR) 31.8.-3.9. 2004, Ed.: Frébort, Walterová, pp. 237-238, ISBN 80-244-0882-1, (Po)
- [14] Letašiová, S.*, Theiszová, M., Čipák, L., Jantová, S.: Evaluation of the cytotoxic and mutagenic potential of berberine and the ability to induce the apoptosis In: Proceedings of the XIX. Meeting of Czech and Slovak Societies for Biochemistry and Molecular Biology, Olomouc (ČR) 31.8.-3.9. 2004, Ed.: Frébort, Walterová, pp. 216-217, ISBN 80-244-0882-1, (Po)
- [15] Miko, M.*, Lakomá, J., Melník, M., Valigura, D.: Effects of nitrobenzoatecopper(II) complexes on energy-requiring and energy-producing processes in Ehrlich ascites cells In: Proceedings of the XIX. Meeting of Czech and Slovak Societies for Biochemistry and Molecular Biology, Olomouc (ČR) 31.8.-3.9. 2004, Ed.: Frébort, Walterová, pp. 224-225, ISBN 80-244-0882-1, (Po)
- [16] Mikulášová, M.*, Birošová, L., Suchánová, M.: Genotoxic effect of phenolic acids. In: Aktuální problematika genetické toxikologie, NCO NZO Brno, 5.-7.5.2004, pp.75-76. ISBN 80-7013-401-1.(Po)
- [17] Milata, V., Štetinová, J., Theiszová, M.*, Jantová, S.: Synthesis and biological activity of new nitrogen heterocyclic compounds In: Sborník konference. XXVII. Konference organických chemiků, 14.-17.6.2004, Pardubice (ČR), p.PO27 (Po)
- [18] Orlický, J., Lakatoš, B.*, Hudec, R., Kaiserová, K., Varečka, L.: Basal Ca²⁺ inward and outward fluxes in human red blood cells are coupled by the H⁺ homeostasis. In: 4th International Symposium on Membrane Channels, Transporters and Receptors, Smolenice (SR) 5-9 June 2004, p. 67, (Po)
- [19] Slugeň, D., Migrová, D., Kaliňák, M., Malík, F.: Analytical assessment of wine quality and the course of malic-lactic fermentation in slovak wines year 2003. In: 23. Kongres československej spoločnosti mikrobiologickej, 6.9.-9.9.2004 Brno (ČR). Bulletin čs. spoločnosti mikrobiologickej ISSN 0009-0646 - Abstrakty. s. 270, (Po)
- [20] Jašková*, J., Segľa, P., Mikloš, D., Melník, M., Kaliňáková, B., Hudecová, D., Sillanpää, R.: The structural study of copper(II) compounds with selected tridentate chelating ligands. In: XIVth Winter School on Coordination Chemistry, Karpacz, Poland 6-10 December 2004, (2004).
- [21] Jašková*, J., Segľa, P., Mikloš, D., Švorec, J., Kaliňáková, B., Hudecová, D., Melník M.: Structure, spectral properties and antimicrobial activities of copper(II) pyridine carboxylates. In: V. Seminár Pokroky v anorganickej chémii, Zborník príspevkov, Modra, 22.-25.6.2004, 31-54 s., (2004).
- [22] Letašiová, S.*, Jantová, S., Horváthová, M., Lakatoš, B.: Toxicity and apoptosis induced by berberine - potential anticancer drug In: 9th Interdisciplinary Slovak-Czech Toxicological Conference, Píla-Častá (SR) 15.-17.9.2004, p.29 (Pr)
- [23] Letašiová, S.*, Jantová, S., Horváthová, M.: Anticancer effects and DNA damage induced by berberine in cancer cells In: Jesenné pracovné dni "Genetická toxikológia a prevencia rakoviny", 18. - 20. Október 2004, Bratislava (SR), Eds.: Vlčková, Grolmus, pp.22-24 ISBN 80-96-9136-9-7, (Pr)
- [24] Miko, M.*, Souček, R.: Mode of cytotoxic action of oracin metabolite 11-dihydrooracin (DHO) In: Proceedings of the XIX. Meeting of Czech and Slovak Societies for Biochemistry and Molecular Biology, Olomouc (ČR) 31.8.-3.9. 2004, Ed.: Frébort, Walterová, pp. 209-210, ISBN 80-244-0882-1, (Pr)
- [25] Olejníková, P.*, Pokorný, R., Hudecová, D., Varečka, L.: Characterization of fungal isolates of lignin In: 23.Kongres československej spoločnosti mikrobiologickej, 6.9.-9.9.2004 Brno (ČR). Bulletin čs. spoločnosti mikrobiologickej ISSN 0009-0646 - Abstrakty. s. 85, (Pr)
- [26] Šimkovič, M.*, Frerman, FE.: Purification and characterization of a human electron transfer flavoprotein-ubiquinone oxidoreductase In: Proceedings of the XIX. Meeting of Czech and Slovak Societies for Biochemistry and Molecular Biology, Olomouc (ČR) 31.8.-3.9. 2004, Ed.: Frébort, Walterová, pp. 144-145, ISBN 80-244-0882-1, (Pr)
- [27] Varečka, L.*, Hudec, R., Lakatoš, B., Šimkovič, M., Kaiserová, K., Orlický, J.: Modulation of (basal) Ca²⁺ fluxes across the plasma membrane by protonmotive force In: Proceedings of the XIX. Meeting of Czech and Slovak Societies for Biochemistry and Molecular Biology, Olomouc (ČR) 31.8.-3.9. 2004, Ed.: Frébort, Walterová, pp. 146-147, ISBN 80-244-0882-1, (Pr)

Contracts

- [1] Hudecová, D., Varečka L.: Verification of antimicrobial activity of samples on selected microorganismes ZoD 156/2004, Cementárne Ladce a.s., Ladce (2004)
- [2] Hudecová, D., Varečka L.: Assay of antimicrobial activity of dry plaster mixtures ZoD 74/2004, Cementárne Ladce a.s., Ladce (2004)
- [3] Mikulášová, M., Galádová, M., Jeloková, E.: Examination of biological damage of wood samples. ZoD 20/2004, SCA Hygiene Products s. r. o., Gemerská Hôrka (2004)

Grants

- [1] Jantová, S. a kol.: Cytotoxicity of new prepared xenobiotics and mechanism of their action. Grant. VEGA projekt 1/1173/04 (2004-2006).

DEPARTMENT OF CERAMICS, GLASS AND CEMENT

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I. STAFF

Associate Professors:

Miroslav Jamnický, PhD; Martin T.Palou, PhD;

Assistant Professors :

Jozef Kákoš, PhD; Vladimír Kovár, PhD; Eva Smrčková, PhD;

Research Fellows:

Jana Kozánková; Štefan Svetík;

PhD Students:

Katarína Bodišová (since 1.10.2002); Martin Dovaľ (since 1.10.2003), Jana Hrubá (since 1.10.2004); Eva Kuzielová (since 1.10.2004); Radovan Tóth (since 1.10.2001)

Technical staff:

Ľudmila Illášová; Pavol Krutý; Mária Pelíšková; Iveta Zezulová;

II. TEACHING AND RESEARCH LABORATORIES

A. Teaching laboratories:

Teaching laboratory I
Teaching laboratory II

B. Research laboratories:

Laboratory of ceramics
Laboratory of glass
Laboratory of inorganic binders
Laboratory of sol/gel
Laboratory of inorganic powders synthesis
Laboratory of thermal analysis
Laboratory of calorimetry
Scanning electron microscopy laboratory
X-ray diffractometer laboratory

III. TEACHING

A. Undergraduate Study:

1. semester (Bc)	Materials technology	2/0/0	Palou
	Bachelor's thesis	0/0/4	Kozánková, Palou, Smrčková
1. semester (Bc)	Inorganic chemistry III	2/2/0	Jamnický
	Solid state physics	2/0/0	Lokaj, Smrčková
	Raw materials and technical mineralogy	2/1/0	Svetík, Kozánková
	Specialised laboratory practices I	0/0/10	Kákoš, Kovár, Kozánková, Palou, Smrčková, Svetík
1. semester (Bc)	High temperature processes	2/1/0	Kovár
	Applied heat technique	2/1/0	Kákoš, Kovár
	Specialised laboratory practices II	0/0/8	Smrčková, Kovár, Jamnický, Kákoš
	Factory praxis	two weeks	Jamnický, Smrčková
1. semester (Bc)	Technology of spec. inorg. materials	2/0/0	Kákoš
	Inorganic binders technology	2/0/0	Palou
	Technology of ceramics	2/0/0	Smrčková
	Technology of glass	2/0/0	Jamnický

1. semester (Bc)	Specialised laboratory practices III	0/0/10	Jamnický, Palou, Smrčková, Kákoš, Kozánková
1. semester (Bc)	Master's thesis laboratory	0/0/27	Jamnický, Kákoš, Kovár, Palou, Smrčková

IV. CURRENT RESEARCH PROJECTS

VEGA Project No 1/9141/02 Superionic conducting oxide glass and glass-crystal composite materials containing copper cations (Miroslav Jamnický)

Determination of the optimum procedures for the preparation of electrically conductive oxide glasses containing copper cations in the systems of the general composition $\text{CuI} - \text{CuBr} - \text{Cu}_2\text{O} - \text{P}_2\text{O}_5 - \text{MoO}_3$. Determination of new relationships among the composition, the structure and the electrical conductivity of phosphate and phosphate – molybdate glasses containing copper ions. The experimental and theoretical investigation of ion conductive glasses under study proved that acoustical spectroscopy can be very useful technique for study of transport processes in fast ion conductive glasses.

Project duration: from 01.01.2002 to 31.12.2004

VEGA Project No 1/0245/03 Effect of seeding additives on the phase and microstructure involvement during hydration of sulfoaluminate cements (Martin T. Palou)

The seeding additives were synthesized and analyzed. The additives are based on gehlenite and dicalcium silicate nano particles synthesized by sol-gel route. Then, they were fired at different temperatures (600, 700, 900, 1100, 1250, 1350 °C). The gel-precursors of gehlenite and dicalcium silicate crystallized with temperatures. The hydration activity of samples prepared at different temperatures has been investigated by means of conduction calorimeter. It was found that the hydraulicity of gehlenite precursor increases with temperature up to 1100 °C, and then it decreases with increasing temperatures. Likewise, dicalcium silicate has shown increasing hydration activity with temperature to 900 °C, before its decreases with temperatures. Also, hydration products were analyzed by X-ray diffraction and scanning microscope. The hydration has been achieved in autoclave at 70 °C during 12 weeks. The hydration products of gehlenite nano particles are crystallohydrates calciumaluminosilicate hydrates in $\text{CaO-Al}_2\text{O}_3\text{-SiO}_2\text{-H}_2\text{O}$ system. The hydration of dicalcium silicate in the same conditions has led to the formation of tobermorite.

The hydration characteristics of samples of different mineralogical compositions in $\text{C}_2\text{S-C}_2\text{AS-C}_4\text{A}_3\text{S}'\text{-CS}'\text{-C}$ system were investigated in hydrothermal conditions. Formed ettringite in earlier period was decomposed into monosulfate after one week of curing. Ettringite is unstable under such conditions. Calciumaluminosilicate hydrate and calcium silicate hydrate were identified after 12 weeks of curing in autoclave.

Project duration: from 01.01.2003 to 31.12.2005

VEGA Project No 1/1380/04 Preparation of Al_2O_3 ceramics from nanosize particles (Vladimír Kovár)

Nanoceramics is at present the largest challenge in the ceramic research, because strength and hardness increase with decreasing grain size. On the other hand it is difficult to achieve nearly full density at sintering without growth of grains. From several sintering mechanism, those that control the grain growth is necessary to suppress. For these purposes positive are low sintering temperature (< 1250 °C) and fast heating rates (200 – 300 °C /min). Experimental works are focused on these dominant requirements for sintering of α -alumina powder of mean particle size of 0,2 μm . Colloidal methods are used for consolidation. Suspensions are stabilized; milled and green bodies are obtained by pressure filtration. Grain growth of α - Al_2O_3 crystals is studied in dependence on additives, heating rate, sintering time and temperature.

Project duration: from 01.01.2004 to 31.12.2006

V. CURRENT EDUCATION PROJECTS

VI. COOPERATION

A. Cooperation in Slovakia

Institution	Type of cooperation	Responsible person	Duration
Slovak University of Technology, Faculty of Electrical Engineering and Informati, Bratislava	Effect of organic additives on crystallization of boehmite gels	Kadlečíková Magdaléna, researcher, Ilkovičova 3, 812 19 Bratislava	
Slovak University of Technology, Faculty of Mechanical Engineering, Trnava	Isostatic pressing of ceramic powders	Turňa Milan, professor, Paulínska 16, 917 24 Trnava	
University of Žilina, Faculty of Mechanical Engineering, Department of Physics, Žilina	Study of mixed cation effect in ion conductivity glasses using electrical conductivity spectra, study of transport mechanisms in fast i	Bury Peter, professor, 010 26 Žilina	
Slovak Academy of Sciences, Institute of Inorganic Chemistry, Bratislava	The structure and properties of cuprous ion conducting glasses	Šajgalík Pavol, director, Dúbravská cesta 9, 843 69 Bratislava	
Slovak Academy of Sciences, Institute of Construction and Architecture, Bratislava	The performances of blended cements based on sulfoaluminate belite and Portland cement	Janotka Ivan, researcher, Dúbravská cesta 9, 842 20 Bratislava	
Slovak Academy of Sciences, Institute of Informatics, Bratislava	Synthetic opals made by the Langmuir-Blodgett method	Bárdošová Mária, researcher, Dúbravská cesta 9, 842 37 Bratislava	
AVANT, a.s., Lučenec (Engineering, investment and design)	Utilization of local raw materials for construction materials production	Molnár Alexander, director, Vajanského 2, 984 01 Lučenec	
Ipeľské tehelne, a.s., Lučenec (Brick plant)	Mineralogical and thermoanalytical investigation of local raw materials for brick production	Dovář Martin, director, M. Rázusa 29, 984 01 Lučenec	
Novoker, a.s., Lučenec (Wall Tiles Producer)	Causes of defect formation and their identification in wall tiles	Sarvaš Ladislav, 984 01 Lučenec-Vidiná	
PPC Insulators – Ceram Čab, a.s.	Properties of electroporcelain	Košalko Ivan, director, 951 24 Nové Sady	
Tondach, s. s r.o. Stupava	Properties of roof silicate tiles	Horváth Vincent, Železničná 53, 900 31 Stupava	
Johns Manville Skloplast, a.s., Trnava (Glass fibre producer)	Optimization of drainage ovens of glass melting aggregate	Kalinay Andrej, Strojárska 1, 917 99 Trnava	
RONA, a.s., Lednické Rovne (Glass work)	Causes of defect formation and their identification in glassware	Šimurka Peter, vice-director, Schreiberova, 020 61 Lednické Rovne	
Slovglass, a.s., Poltár (Crystal glass producer)	Review and process optimization in lead glass polishing and in neutralization station	Zán Ľubomír, director, 987 01 Poltár	
Technické sklo, a.s., Bratislava (Technical Glass Work)	Preparation of glass-ceramic materials by controlled processes of nucleation and crystallization	Chocholoušek Jozef, head of testing laboratory, Agátová, 844 03 Bratislava	
Východoslovenské stavebné hmoty, a.s., Turňa nad Bodvou (construction materials producer)	Milling ability of cement clinker and various additives	Jaklovský Štefan, director, 044 02 Turňa nad Bodvou	
Holcim, a.s., Rohožník (Cement Producer)	Effect of various gypsums on setting and hardening of cement	Hanzo Peter, director, 906 38 Rohožník	
Považská cementáreň, a.s., Ladce (Cement Producer)	Determination of P2O5 content in Portland clinker fired with addition of meat-bone flour, determination of water soluble chromium in ce	Martauz Pavol, director, ul. J. Kráľa, 018 63 Ladce	
Beton Racio, s. s r.o., Trnava	Evaluation of water quality for concrete production	Halaša Igor, Skladová 2, 917 01 Trnava	

Institution	Type of cooperation	Responsible person	Duration
TAZUS, a.s., Bratislava	Chemical and phase analysis of raw materials and products	Zajiček Milan, director, Studená 3, 826 34 Bratislava	
DATASYSTEM Laboratory, Bratislava	Thermal analysis evaluating optical transmittance, prospects and limitations	Kremničan Vladimír, director, Budovateľská 13, 821 08 Bratislava	

B. International Cooperation

Institution	Type of cooperation	Responsible person	Duration
Mount Allison University, Department of Chemistry, Sackville, Canada	Growth, morphology and thermoanalytical properties of fluoroapatite bio-glass-ceramics in lithium disilicate glasses	Mojumdar Subhash C., Sackville, NB, E4L 1G8, Canada	
University of Boumerdes, Faculty of Engineer Science, Department of Engineering Materials, Boumerdes	Silica fume treatment for improving durability of alkali resistant glass fibres in cement matrixes	Ayadi. Azzedine, professor, 350000 Boumerdes, Algeria	
University of Manchester, Department of Chemistry, Manchester, UK	Synthetic opals made by the Langmuir-Blodgett method	Hodge Paul, Oxford road, Manchester, UK	

C. Membership in Domestic Organizations and Societies

Name	Organisation or Society	Position	Valid date
	Slovak Silicate Society, Bratislava	member	
Jamnicky Miroslav	Slovak Glass Society, Lednické Rovne	member of advisory board	01.01.1997 -
	Union of Glass Industry, Bratislava	member	
Palou Martin	Slovak Institute for Standardization (technical comission No 40 Inorganic binders)	member	01.01.2000 -
Smrčková Eva	Slovak Institute for Standardization (technical comission No 56 Construction materials and testing)	member	01.01.2000 -

D. Membership in International Organisations and Societies

Name	Organisation or Society	Position	Valid date
Pach Ladislav	American Ceramic Society, USA	member	01.01.1994 -

E. Visitors from abroad

Name	Organisation or Institution	State	Date / Duration
Havlica, J.	Technical university, Brno	Czech Republic	May 2004 (1 day)
Jüstel, T.	Fachhochschule Münster	Germany	October 2004 (1 day)
Havlica, J.	Technical university, Brno	Czech Republic	October 2004 (1 day)
Hasselkus, J.	Krahn Chemie GmbH, Hamburg	Germany	October 2004 (1 day)

F. Visits of Staff Members and Postgraduate Students in Foreign Institutions

Name	Organisation / Institution / Conference	State	Date / Duration
Smrčková, E.	XI. SILICHEM 2004 (conference), Brno	Czech Republic	May 2004 (3 days)
Palou, M.	Advanced Technologies for Developing Countries (3rd DAAAM international conference), Split	Croatia	June 2004 (4 days)
Bodišová, K., Dovál, M., Palou, M.	SOLID STATE CHEMISTRY 2004 (conference), Prague	Czech Republic	September 2004 (4 days)
Palou, M.	Meeting of European committee for standardization of cement and construction lime, Lisbon	Portugal	October 2004 (3 days)
Palou, M.	Dissertation work judgement, VUT CHF Brno	Czech Republic	November 2004 (1 day)
Smrčková, E.	Seminary ICP-MS, Labtech Brno	Czech Republic	November 2004 (2 days)
Dovál, M., Smrčková, E.	MALTOVINY – BINDING MATERIALS 2004 (conference), Brno	Czech Republic	December 2004 (1 day)
Tóth, R.	UNIDO International Centre for Science and High Technology, Trieste	Italy	one year

VII. THESES AND DISSERTATIONS

A. Graduate Theses (Bc Degree) for state examinations after three years of study

Name	Title of Thesis	Supervisor
Gajdoš, D.	Novel bioceramics materials on the chlor-hydroxyapatite base for medicine application	Palou, M.
Kadaši, T.	Study of thin nitridated silica layers and their interfaces with the substrate	Kákoš, J.
Rafayová, J.	Novel bioceramics materials for medicine application	Palou, M.
Vašková, I.	Suitability evaluation of given raw material for ceramic production	Kovár, V.
Vítkovič, M.	Effect of zeolite-ferrous sulphate mixture addition on water soluble Cr (VI) content in portland cement	Smrčková, E.

B. Graduate Theses (MS Degree) for state examinations after five years of study

Name	Title of Thesis	Supervisor
Genčúr, R.	Influence of ceramic frits composition on physical and chemical properties of glazes	Jamnický, M.
Hrubá, J.	Thin protective and insulation layers of silica oxide	Kákoš, J.
Chovancová, S.	Preparation of seeding additives for controlled hydration of SAB cements	Smrčková, E.
Kováčová, M.	Production and properties of silicate roof tiles	Smrčková, E.
Kuzielová, E.	Preparation of colloidal SiO ₂ particles	Smrčková, E.
Leťková, L.	Modelling of formation reaction of portland clinkers using alternative fuels	Palou, M.
Paulechová, M.	Controlled development of SAB cement microstructure at gehlenhydrate and ettringite formation	Palou, M.
Psota, A.	Recycling of technological waste from glass fibre production	Kovár, V.

C. Dissertations (PhD)

Name	Title of Thesis	Supervisor
Rebroš, M.	Effect of physical and chemical factors on commercial glass corrosion	Jamnický, M.

VII. PUBLICATIONS

CC publications

- [1] Bury, P., Hockicko, P., Jurečka, S., Jamnický, M.: Analysis of acoustic attenuation spectra due to ion transport processes in glassy electrolytes. *Physica Status Solidi (c)*, x (11) 2888-2891 (2004)

- [2] Bury, P., Jamnický, M., Hockicko, P., Jamnický, I.: Transport mechanisms study of glassy electrolytes using acoustic attenuation and conductivity spectroscopy. *Glass Science and Technology*, 77, 354-358, Suppl. C7 (2004)
- [3] Holková, Z., Pach, L., Lath, D., Krištín, J.: Relation among the aggregation of boehmite particles in sols, microstructure of gels and crystallization of corundum. *Chem. Papers*, 58 (3) 149-154 (2004)
- [4] Rebroš, M., Jamnický, M., Kadlečiková, M.: Characterization of solid weathering products formed in polluted atmospheres on crystal glass. *Glass Science and Technology*, 77, 425-428, Suppl. C7 (2004)
- [5] Sedláček, J., Rebroš, M., Jamnický, M., Lokaj, J.: Influence of glass composition on high zirconia fused cast refractory corrosion. *Glass Science and Technology*, 77 (4) 194-198, Suppl. C7 (2004)

Other publications

- [1] Hockicko, P., Bury, P., Jurečka, S., Jamnický, M., Jamnický, I.: Analysis of acoustic spectra reflecting ion transport processes in glassy electrolytes. *Advances in Electrical and Electronic Engineering*, 3 (2) 243-246 (2004).

Other publications

- [1] Bury, P., Hockicko, P., Jamnický, M., Jamnický, I.: What do acoustical properties about the mechanism of ion transport processes in glassy electrolytes. In: *Proc. of the 18th Int. Congr. on Acoustics, Kyoto (Japan), April 4-9, 2004*, vol. II, pp. 1137-1140 (2004). ISBN 4-9901915-6-0 (Pr)
- [2] Dovál, M., Palou, M. T.: Influence of temperature upon the kinetics and mechanism of the hydration of main phase of sulfoaluminate belite cement. In: *Sb. příspěvků Mezinárodní slovenský a český kalorimetrický seminář 2004, Demánová dolina, 24.-28.5.2004, Ostravská univerzita*. pp. 49-52 (2004). ISBN 80-7042-990-9 (Pr)
- [3] Dovál, M., Smrčková, E., Palou, M.: Synthesis of hydraulic active nano-crystalline C2AS and C2S phases by sol-gel method. In: *Sb. III. odborné konference o věde, výzkumu a aplikacích v oboru maltovin, Maltoviny 2004, Brno (Czech Republic), Dec. 16, 2004*, Ed. M. Fridrichová, VUT Brno, pp. 208-213 (2004). ISBN 80-214-2806-6 (Pr)
- [4] Hockicko, P., Bury, P., Jurečka, S., Jamnický, M., Jamnický, I.: Acoustic spectroscopy investigation of ion conductive glasses of the system CuI-CuBr-Cu2O-P2O5. In: *Proc. of the 8th Int. Colloquium ACOUSTICS'04, Zvolen, Sept. 8-10, 2004*, pp. 25-29 (2004). ISBN 80-228-1359-1 (Pr)
- [5] Hockicko, P., Bury, P., Jurečka, S., Jamnický, M., Jamnický, I.: The investigation of transport processes in ion conductive glasses using acoustical and electrical spectroscopy. In: *Proc. of the Conf. New Trends in Physics - NTF 2004, Brno (Czech Republic), Nov. 11-12, 2004*, pp. 40-43 (2004). ISBN 80-7355-024-5 (Pr)
- [6] Hockicko, P., Jurečka, S., Bury, P., Jamnický, M., Jamnický, I.: The acoustic attenuation theoretical models for the ion conductive glasses. In: *Proc. of the 10th Int. Workshop on Applied Physics of Condensed Matter, Častá-Pila, June 16-18, 2004*, p. 96-99 (2004). ISBN 80-227-2073-9 (Pr)
- [7] Kákoš, J., Kozánková, J.: Silica based colloidal crystals on silicon In: *Proc. of the Int. Conf. Silicon - News in Science and Technology SNST 2004, Podbanské, Febr. 29 - March 3, 2004*, Ed. S. Jurečka, J. Müllerová, pp. 71-74 (2004). ISBN 80-89186-03-3 (Pr)
- [8] Palou, M. T., Dovál, M., Smrčková, E.: Immobilization of hexavalent chromium by different cement phase phases and study of hydration activity In: *Sb. příspěvků Mezinárodní slovenský a český kalorimetrický seminář 2004, Demánová dolina, 24.-28.5.2004, Ostravská univerzita*. pp. 41-44 (2004). ISBN 80-7042-990-9 (Pr)
- [9] Palou, M. T., Ghorab, H. Y., Ayadi, A.: Development and application of low-energy cements In: *Proc. 2nd Africa-MRS Conference 8 to 11 December 2003, published by University of Witwatersand, South Africa*, Ed. Y. Ballim, A.G. Every, S. Lucky, D.C. Levendis, pp. 73-74 (2004). ISBN 0-620-31513-X (Pr)
- [10] Palou, M., Majling, J., Jamnický, M.: Trends in the reduction of CO2 emissions in cement industry. In: *Proc. of the 19th International Conference Air 2004 Protection, Vysoké Tatry- Štrbské Pleso, 24.-26.11.2004, Dom techniky ZVSVTS Bratislava*. pp. 47-51 (2004), ISBN 80-233-0500-X (Pr)
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- [15] Bodišová, K., Pach, L.: Preferred orientation of boehmite crystallites in gels and crystallization of alpha Al2O3 In: *Proc. VI. Solid State Chemistry, Praha (Czech Republic), September 13-17, 2004*, Ed. Ballardová E., Grygar T., Bezdička P., Academy of Sciences of Czech Republic, Řež, p. 146 (2004), ISBN 80-239-2480-X (Po)
- [16] Dovál, M., Palou, M. T., Kovár, V.: Heat evolution and mechanism of hydration in CaO-SiO2-Al2O3-SO3. In: *Proc. VI. Solid State Chemistry, Praha (Czech Republic), September 13-17, 2004*, Ed. Ballardová E., Grygar T., Bezdička P., Academy of Sciences of Czech Republic, Řež, p. 78 (2004), ISBN 80-239-2480-X (Po)
- [17] Palou, M. T., Dovál, M., Kozánková, J., Ayadi, A.: The formation and stability of crystallohydrates in the non-equilibrium system during hydration of SAB cements. In: *Proc. VI. Solid State Chemistry, Praha (Czech Republic), September 13-17, 2004*, Ed. Ballardová E., Grygar T., Bezdička P., Academy of Sciences of Czech Republic, Řež, p. 117 (2004), ISBN 80-239-2480-X (Po)

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- [20] Mojumdar S.C., Kozánková J., Chocholoušek J., Majling J., Nemecek V.: Fluoroapatite – material for medicine. Growth, morphology and thermoanalytical properties. Journal of Thermal Analysis and Calorimetry 78(1) 73-82 (2004)
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Contracts

- [1] Jamnický, M.: Overenie sorpcie chloridov apatitovými sorbentami v podmienkach výpalu portlandského slinku ZoD 83/04. Považská cementáreň, a.s. Ladce (2004)
- [2] Jamnický, M.: Výskum vlastností a využitia diatomických zemín v keramike ZoD 52/04. Ipeľské tehelne, a.s. Lučenec (2004)
- [3] Kovár, V. Príprava vzoriek na identifikáciu povrchových vád glazúr ZoD 179/04. Bloomsbury Pacific Slovakia, a.s. (2004)
- [4] Kozánková, J.: Mikroskopické meranie vzoriek škrobu 1 ZoD 106/04. Ústav polymérov SAV, Bratislava (2004)
- [5] Kozánková, J.: Mikroskopické meranie vzoriek škrobu 2 ZoD 154/04. Ústav polymérov SAV, Bratislava (2004)
- [6] Kozánková, J.: Povrchová úprava vzoriek naprašovaním kovom ZoD 81/04. Ústav zoológie SAV, Bratislava (2004)
- [7] Kozánková, J.: Zhodnotenie mikrografií z Al pasivovaného Al₂O₃ ZoD 126/04. Ampla Polygrafia, Bratislava (2004)
- [8] Smrčková, E.: Chemická a fázová analýza pieskového popola ZoD 148/04. TSUS pobočka Bratislava (2004)
- [9] Smrčková, E.: Chemická a fázová analýza tmelu a výkvetov na keramickej dlažbe ZoD 115/04. TSUS pobočka Bratislava (2004)
- [10] Smrčková, E.: Chemická analýza výkvetu na betóne ZoD 51/04. TSUS pobočka Bratislava (2004)
- [11] Smrčková, E.: Chemické a fázové analýzy surovín a betónu ZoD 85/04. Betón Racio, s.r.o., Trnava (2004)
- [12] Smrčková, E.: Chemický rozbor výkvetov na tehlách zo závodu Breznička ZoD 133/04. Ipeľské tehelne, a.s., Lučenec (2004)
- [13] Smrčková, E.: Posúdenie vlastností dvoch druhov silikátovej strešnej krytiny ZoD 170/04. Tondach Slovensko, s.r.o. Stupava (2004)
- [14] Smrčková, E.: RTG fázová analýza prieskovca ZoD 50/04. TSUS pobočka Bratislava (2004)
- [15] Smrčková, E.: Stanovenie alkálií vo výluhoch fosfátových vzoriek ZoD 107/04. Považská cementáreň, a.s. Ladce (2004)
- [16] Smrčková, E.: Stanovenie hydratačného tepla cementu ZoD 174/04 Holcim, a.s. Rohožník (2004)
- [17] Smrčková, E.: Stanovenie materiálovej bilancie - spotreby chemikálií - pri striebrení a medení sklenených trubíc, ako aj pri neutralizácii odpadových vôd ZoD 36/04. HIVUS, s.r.o. Žilina (2004)
- [18] Smrčková, E.: Zhodnotenie porozity porcelánového črepu ZoD 86/04. Ceram Čab, a.s. Nové Sady (2004)

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Associate Professors:

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Assistant Professors :

Ačai Pavel, PhD; Bafrnec Milan, PhD; Bafrncová Soňa, PhD; Havalda Ivan; Šefčík Jaroslav; Šefčíková Milica, PhD, Timár Pavel, PhD; Vajda Milan, PhD

Research Fellows:

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PhD Students:

Holíková Kristína; Gramblička M., Juraščík Martin; Kertesz Rudolf; Krajčiová Michaela; Kiša Michal; Labovský Juraj, Malík Fedor; Mierka Oto; Platková Zdenka; Švandová Zuzanna, Vandáková Marcela; Wilinska A., Znad T. Hussein;

Technical staff:

Dobrovodská Mária; Herzán Ľubomír; Hinca Miloš; Ördögová Marta; Rizman Viliam;

II. TEACHING AND RESEARCH LABORATORIES

A. Teaching laboratories:

Laboratory of Chemical Engineering
Laboratory of Unit Operations
Laboratory of Reaction Engineering
Laboratory of Membrane Processes
Laboratory of Chemical Engineering Thermodynamics
Membrane Processes and Membrane Reactors
Laboratory of Adsorption

B. Research laboratories:

Laboratory of Chemical Reaction Kinetics and Reaction Engineering
Laboratory of Membrane Processes and Membrane Reactors
Laboratory of Adsorption and Bioprocess Engineering
Laboratory of Bioprocess Engineering

III. TEACHING

A. Undergraduate Study:

1. semester (Bc)	Material Balances of Technological Processes	0/2/0	M.Šefčíková, P.Ačai, S.Bafrncová, I.Havalda, V.Illeová, M.Juraščík, J.Labovský, Z.Platková, V.Štefuca, P.Timár
1. semester (Bc)	Chemical Engineering I, Lectures	2/0/0	V.Báleš, L.Jelemenský, J.Stopka
	Chemical Engineering I Exercises	0/3/0	J.Šefčík, P.Ačai, M.Bafrnec S.Bafrncová, E.Besedová, I.Havalda, O.Mierka, P.Timár
	Chemical Engineering I Laboratory		P.Timár, P.Ačai, M.Antošová, M.Bafrnec, S.Bafrncová, A.Besedová, I.Havalda, K.Holíková, O.Mierka, J.Šefčík

1. semester (Bc)	Chemical Engineering II Lectures,	2/0/0	E.Graczová, M.Polakovič, V.Štefuca
	Chemical Engineering II, Exercises	0/3/0	J.Šefčík, P.Ačai, M.Bafrnec, S.Bafrncová, E.Besedová, E.Graczová, I.Havalda, M.Juma, P.Steltenpohl, O.Mierka, J.Šefčík,
	Chemical Engineering II, Laboratory	0/0/3	P.Timár, P.Ačai, M.Antošová, M.Bafrnec, S.Bafrncová, I.Havalda, V.Illeová, M.Juma, J.Stopka, J.Šefčík, M.Šefčíková
1. semester (Bc)	Engineering Thermodynam., Lectures, Exercises	2/2/0	O.Mierka, O.Mierka, M.Šefčíková, P.Timár
	Technological Projects	0/0/4	M.Antošová, E.Besedová, E. Graczová, J.Markoš, O.Mierka, P.Steltenpohl
1. semester (Bc)	Chemical Engineering Thermodynamics, Lectures Exercises	2/2/0	E.Graczová, E.Graczová, P.Steltenpohl
	Diffusional Sep. Proc., Lect., Exercises	2/2/0	M.Polakovič, M.Juma
	Hydrodynamics and Heat Transfer Lectures Exercises Laboratory	2/2/2	J.Stopka, I.Havalda J.Stopka
	Mass Transfer Theory	2/1/0	L.Jelemenský
1. semester (Bc)	Mathematical Methods in Chemical Engineering	0/0/3	I.Havalda
	Computer Chemical Engineering Calculations	0/0/3	M.Juma, O.Mierka Jr., P.Steltenpohl
	Fire Engineering, Lectures Exercises	2/2/0	L.Jelemenský Z. Švandová
1. semester (Bc)	Chemical Engineering I Lectures, Exercises, Laboratory	2/2/2	J.Markoš, MVajda J.Markoš
	Safety Engineering I	2/1/0	L.Jelemenský, r
	Bioprocess Engineering I	2/0/1	V.Báleš, M.Polakovič
	Project of Equipment of Chemical and Food Technology	0/0/3	P.Timár, P.Ačai, D.Bobok, L.Jelemenský, J.Markoš, O.Mierka, P.Steltenpohl, V.Štefuca
1. semester (Bc)	Advanced Laboratory of Chemical Engineering I	0/0/3	J.Šefčík, D.Bobok, E.Besedová, E.Graczová M.Juma, J.Stopka, Š.Schlosser, V.Štefuca, M.Vajda
	Selected Unit Operations	2/0/0	D.Bobok, Š.Schlosser
	Explosion Prevention Lectures Laboratory	2/0/2	L.Jelemenský, A.Molnár
	Process Systems Engineering	2/0/2	J.Markoš, M.Juma
	Biochemical Engineering Lectures	2/0/1	M.Polakovič
	Basic Safety Engineering	2/1/0	L.Jelemenský
3. semester (MSc)	Chemical Reaction Engineering II Lectures, Laboratory	2/0/1	J.Markoš
	Process Systems Engineering, Lectures, Laboratory	1/0/2	J.Markoš, M.Juma
	Advanced Laboratory of Chemical Engineering II	0/0/6	M.Bafrnec, E.Graczová, J.Markoš, O.Mierka, M.Polakovič,
	Cost Engineering of Industrial Projects	0/2/0	M.Bafrnec
1. semester (Bc)	Solid Particles in Technology and Environment	2/0/0	P.Timár
	Design Projects	0/0/2	O.Mierka
	Membrane Processes	1/0/1	Š.Schlosser
	Safety Engineering II	2/1/0	L.Jelemenský

1. semester (Bc)	Laboratory of Process Plant Safety	0/0/3	L.Jelemenský
	Laboratory of Safety Engineering	0/0/4	E.Graczová, L.Jelemenský, O.Mierka, J.Stopka, V.Štefuca, P.Timár
	Reaction Engineering II	2/0/0	J.Markoš
	Safety Engineering II	2/0/0	L.Jelemenský
4. semester (MSc)	Diploma Work	0/0/2 7	M.Bafnec, E. Graczová, L.Jelemenský, J.Markoš, O.Mierka, M.Polakovič, J.Stopka, V.Štefuca, P.Timár,

IV. CURRENT RESEARCH PROJECTS

Institutional project 215/03 Modeling of nonstationary industrial production processes (Milan Bafnec)

The aim of the project is the development of physical and mathematical models of industrial production processes, in which forming of materials, heat transfer and chemical reaction in solid phase occur. These processes are nonstationary and mainly proceed in equipment of rubber and plastic industries. For the achievement of the above mentioned goal, methods and computer programs for the solution of the models derived must be elaborated and further methods and apparatuses should be developed for the determination of quantities describing thermodynamic and heat-transfer properties of plastic materials, elastomers, and composite materials produced from them.

Project duration: from 1.1.2003 to 31.12.2005

VEGA Project No 1/0063/03, Pollutants separation from fluid mixtures (Daniel Bobok)

Measurement of adsorption equilibrium data of pollutants on carbon adsorbents. Investigation of the resistance against mass transfer in solid phase pores. Modeling of adsorption separation in a fixed bed of adsorbent. Experimental estimation of extraction properties of pure solvents, prediction and verification of properties of mixed solvents, particularly aimed at extraction of BTX aromatics. Modeling and calculation of emissions of volatile organic compounds released from waste-water treatment plants.

Project duration: from 01.01.2003 to 31.12.2005

Grant VEGA 1/0064/03, Mechanism of coal particle combustion in low oxygen concentration atmosphere (Jozef Markoš)

The project is devoted to the investigation of combustion of a single coal particle (representing the smallest unit of an industrial combustor) under conditions of low oxygen concentration and high concentration of carbon dioxide. The microstructure properties of the combusted particle will be investigated and the influence of its change during combustion on the mechanism and kinetics of the process will be studied. A mathematical model of the combusted particle, involving all partial processes inside the particle will be developed and compared with experimental data. Model parameters will be determined and optimal performance conditions will be proposed with the aim to minimize the emission of carbon monoxide.

Project duration: from 2003 to 2005

Grant VEGA 1/0066/03 Designing and optimisation of bubble column reactors (Vladimír Báleš)

The aim of the project is to study the use of mixed bubble column reactors (bubble columns, airlift reactors) for progressive food technologies. By monitoring fermentation process and transformation of glucose to gluconic acid at growth and non-growth conditions, the influence of biomass concentration on the hydrodynamic regime of the reactor and oxygen transfer through interfacial area will be studied. By developing a mathematical model for the non-steady state conditions involving reaction kinetics, gas hold up dynamics and oxygen transfer, the progress of bubble column reactors scale-up will be proposed.

Project duration: from 2003 to 2005

VEGA 1/1377/04 Quantitative framework for safety analysis of chemical reactors (Ľudovít Jelemenský)

The aim of the project is a further development of an integrated simulation program for safety analysis, which was developed by our research group within the framework of the foregoing project. An extension of the integrated program is suggested. This will be based on a detailed model of the process, which takes into account nonlinear dynamics and uncertainty. For the prediction of feasible disasters and problems occurring in a plant the attention should be focused on the assessment of causes and consequences of danger due to the existence of multiple steady states and unsteady failures following from nonlinear dynamics.

Project duration: from 2004 to 2006

RP 5: PRISM: Grant G1RT – CT –2001 – 05029, Process industries safety management – thematic network on human factors (Ľudovít Jelemenský)

www.prism-network.org

Project duration: from 2002 to 2004

Project APVT-99-005002, Complex treatment of Alfalfa as a sustainable energy source by combination of conventional and biotechnological approaches (Vladimír Štefuca)

Technology proposal for isolation and purification of substances obtained by lucerne biomass fractionation - Isolation methods for products of lucerne juice fermentation - Production of biofuels, lactic acid and biogas -Alternative lucerne exploitation.

Project duration: from 01.09.2002 to 31.08.2005

Research contract of the Department of Agriculture, Food and Safety, subtopic 14b, Isolation and research of properties of bioactive compounds from Amaranthus and their using in human nutrition (Vladimír Štefuca)

The project aim is the developing of procedures of isolation of proteins and lipid compounds from green parts and the corn of Amaranthus. The final objective is to design technological solution for the production of compounds from Amaranthus that can be used in human nutrition as alternative sources of more conventional compounds.

Project duration: from 01.09. 2003 to 31.08.2006

Project VEGA 1/0065/2003, Kinetic and transport phenomena in enzyme technology (Milan Polakovič)

The project is aimed at the optimization of selected processes of enzyme technology when the investigation of these processes relies on the analysis of kinetic and transport phenomena, especially those of heat and mass transfer. There are three key thematic areas in this project: optimization of production of fructooligosaccharides, applications of flow calorimetry in the study of immobilized systems and the investigation of kinetics of enzyme reactions with macromolecular substrates.

Project duration: from 01.2003 to 12.2005

Project No. 30 of the programme Štefánik - Slovak-French Bilateral Cooperation in Science, Mechanisms of adsorption on heterogeneous surfaces. Applications to environmental problems (Milan Polakovič)

The project elaborates experimental and theoretical approaches of the characterization of liquid-solid adsorption processes that are applied in two application areas. The first one is the selection of activated carbon adsorbents for the treatment of drinking water depending on the type and level of contamination. The second area is the surface modification of mine refuse by adsorption of humic acid molecules preventing the release of sulphides into free nature.

Project duration: from 1.1.2004 to 31.12.2005

Project FP6-SME-2003-1-508374, Ohmic heating for food processing (FOODPRO). (Milan Polakovič)

The aim of this CRAFT (scheme of FP6 focused on small and medium enterprises) project is to develop an alternative heating process through the use of ohmic heating, where the heat is generated through passing an electric current through the food heating it as a result of electric resistance. Thus overheating can be avoided and food with improved taste and nutritional content, and with maintained and in some cases improved microbial safety, may be produced. The role of STU in this project is to investigate the effects of ohmic heating on the stability of food enzymes, the inactivation kinetics of individual enzymes in a broad temperature range and to carry out the comparative consumer study of food products obtained by conventional and ohmic heating.

Project duration: from 1.3.2004 to 28.2.2006

Project FP6-NMP3-CT-2004-500160, Advanced interactive materials by design (AIMs). (Milan Polakovič)

This integrated project AIMs is targeted at the design of a new class of interactive materials composed of functional elements (ligands) for use in the selective purification steps (i.e. chromatography, membrane separation, extraction) of pharmaceutical, chemical and bioindustries. A real breakthrough in the optimisation of production processes in these areas requires the integration of material sciences and process development. AIMs focuses on the production of monoclonal antibodies as an example process. The main objectives in terms of radical innovation in monoclonal antibodies production are an increase in capacity by a factor of 10 to 50 and a reduction of cost of goods by a factor of 10 to 100. The STU teams act in one of six subprojects of this integrated project dealing with the characterization of structural and process parameters of investigated materials and processes. The role of STU is to determine accessibility of different chromatographic adsorbents by size-exclusion techniques, the static adsorption capacity of proteins of interest as well as their dynamics of binding. Together with other partners, the correlations between structural and performance parameters are made which are communicated to the partners involved in the material and process design, respectively.

Project duration: from 1.4.2004 to 31.3.2008

Research contract of Department of Agriculture, Food and Safety, task VaV, Food quality and safety and functionality of primary food resources, subtask: Study of possibilities of enhancement of quality and safety of fish crude (Vladimir Štefuca)

The research subtask is aimed at testing the possibility of quality increase of fish crude by adding microalgae biomass (Spirulina).

Project duration: from 2003 to 2005

N. Integrated reaction-separation systems with membranes, mechanism and modelling of mass transport and interactions in them; VEGA project No. 1/9136/02 (Štefan Schlosser)

Deeper understanding of the mechanism of mass-transfer in reactive membrane based solvent extraction and stripping as well as pertraction of carboxylic acids and phenylalanine has been achieved. It has been shown that the reaction kinetics plays an important or even dominant role, which has to be considered in modelling of these processes. Basic parameters of the reaction-diffusion model and process characteristics of hollow fibre contactors have been estimated for the studied systems. This allows their modeling and simulation.

From a wider screening of ionic liquids (IL) as solvents for organic acids resulted the finding of the phosphonium IL with interesting properties, especially in extraction of lactic acid. The value of its distribution coefficient is above 20 at some concentrations, what is promising in comparison with less than 1 for amine extractants. For the first time IL have been reported as a reactive extractant additionally in interaction with the splitting of reverse micelles. This shows a possible way for the development of new solvents and liquid membranes from IL.

Based on equilibrium and kinetics of adsorption of copper on microparticles of cation-exchangers, as well as on microfiltration characteristics of their suspensions a potential for the hybrid adsorption-microfiltration process has been found at model conditions. It has been found that rheological properties of suspensions of the strong acid ion-exchanger Lewatit S100 are advantageous comparing to chitosan suspensions.

Project duration: from 1.1. 2002 to 31. 12 2004

V. CURRENT EDUCATION PROJECTS

A. Slovak-Norwegian project : Norwegian Competences Transfer Into New Curricula of Environmental Engineering Education at the Slovak University of Technology in Bratislava (Vladimír Báleš)

Project duration: from 2003 to 2004

VI. COOPERATION

A. Cooperation in Slovakia

Institution	Type of cooperation	Responsible person	Duration
Rubber Research Institute Matador, a.s., Púchov	Vulcanization conditions influencing the quality and economy of tire production	Klabník Miroslav, director, Terézie Vansovej 1054/45, 02032 Púchov	continually
Slovnaft, Vlčie hrdlo, Bratislava, Slovakia	International project	Varga, P., Slovnaft, Vlčie hrdlo, Bratislava, Slovakia	Since 2001
Slovnaft VURUP, a.s., Vlčie hrdlo, Bratislava, Slovakia	International project	Mičíková, A., Slovnaft VURUP, a.s., Vlčie hrdlo, Bratislava, Slovakia	Since 2001
NCHZ, a.s.	International project, engineering contract ZoD	Goga, V., NCHZ, a.s., Nováky	Since 2001
Duslo, a.s.	Engineering Contract ZoD	Orihel, J., Duslo, a.s., Saľa	
Duslo, a.s.	International project	Orihel, J., Duslo, a.s., Saľa	Since 2001
Kappa, a.s.	International project	Vačok, Kappa, a.s., Stúrovo	Since 2001
Matador Púchov, a.s.	International project	Kvasnica, J., Matador Púchov, a.s., Púchov	Since 2001
SCP, a.s.	International project	Říha, SCP, a.s., Ružomberok	Since 2001
Slovnaft VURUP, a.s., Vlčie hrdlo, Bratislava, Slovakia	Engineering contract ZoD Pilot project for safety analysis of Slovnaft, a.s.	Mičíková, A., Slovnaft VURUP, a.s., Vlčie hrdlo, Bratislava, Slovakia	continually
Continental Matador,	Engineering project	Sehnal, P. Púchov	Since 2004
Matador Púchov, a.s.	Engineering project	Rosina, Š. general director, Matador Púchov, a.s., Púchov	continually
Slovnaft VURUP, a.s., Vlčie hrdlo, Bratislava, Slovakia	ZoD 123/2004 for VURUP, a.s Pilot project for safety analysis of Slovnaft, a.s.	Míkulec Jozef, director, Slovnaft VURUP, a.s., Vlčie hrdlo, Bratislava, Slovakia	2004
Liko Bratislava a.s.	Alfalfa phytomass exploitation	Minárik Martin, Ing., director, Wolkrova 4, Bratislava	Since 2002 -
Liko Bratislava a.s.	Amaranthus exploitation in human food	Minárik Martin, Ing., director, Wolkrova 4, Bratislava	Since 2003
Liko Bratislava a.s.	FOODPRO, FP6-project	Mráz Igor, Ing. PhD., researcher, Wolkrova 4, Bratislava	Since 2003
Liko Bratislava a.s.	Production of fructooligosaccharides	Minárik Martin, Ing., director, Wolkrova 4, Bratislava	Since 2004
Institute of Chemistry of Slovak Academy of Sciences	Glycerol biosensor development	Gemeiner, Peter, DrSc., researcher, Institute of Chemistry SAS, Dúbravská cesta 9, Bratislava	Since 2003
Novofruct SK	FOODPRO, FP6-project	Uhrín Pavol, Ing., general manager, PO Box 135, 540 43 Nové Zámky	2003-2004

B. International Cooperation

Institution	Type of cooperation	Responsible person	Duration
ETH Zurich, CH	cooperation	Morbidelli, Massimo, professor, ETH Zurich, CH	continually
ICPF AV ČR	cooperation	Drahoš, Jiri, professor, ICPF AV ČR	continually
VŠCHT Praha, CR	cooperation	Hanika, Jirí, professor, VŠCHT Praha, CR	continually
TU VŠB, Praha, CR	cooperation	Wichterle, Kamil, professor, TU VŠB, Praha, CR	continually
EPSC, UK	international project	Turney, Rob, dr., EPSC, UK	continually

Institution	Type of cooperation	Responsible person	Duration
UCL London, UK	cooperation	Bogle, David, professor, UCL London, UK	continually
University of Gent, B	cooperation	Marin, Gui, University of Gent, B	continually
Polimi, Milano, I	cooperation	Colombo, Simone, professor, Polimi, Milano, I	continually
Basque Country University, Bilbao, Spain	cooperation	González Velasco J. R., professor, Basque Country University, Bilbao, Spain	continually
Technical University of Wroclaw, Dept. Polymer Chemistry	membranes	Schlosser, Š. SUT, 812 37 Bratislava, Radlinského 9	Since 2004
CIBA Spezialitätenchemie Grenzach GmbH, Koechlinstrasse 1, D-79639 Grenzach - Vyhlen	engineering Contract, ZoD	Krajnik P., Global Head of Engineering, CIBA Spezialitätenchemie Grenzach GmbH	2004
Ege University, Faculty of Engineering, Izmir, Turkey	membranes	Schlosser, Š. SUT, 812 37 Bratislava, Radlinského 9	Since 2004
Federal Agricultural Research Center	FP5 project	Vorlop Klaus, director, FAL Braunschweig, Germany	Since 2003
Institute National Polytechnique de Lorraine	cooperation in the study of adsorption for the water treatment	Görner Tatiana, Assoc. Prof., Laboratoire Environnement et Minéralurgie, CNRS UMR 7569, 15 avenue du Charmois BP 40, 54501 Vandoeuvre, France	Since 1999
Wroclaw Technical University	cooperation in the kinetics of starch enzyme action and enzyme inactivation kinetics	Bryjak Jolanta, Dr., researcher, Institute of Chemical Engineering ul. Norwida 4/6 50-373 Wroclaw, Poland	Since 1998
ETH Zürich	scientific collaboration in the aggregation kinetics of milk proteins	Šefčík, Ján, PhD., research associate, Institut für Chemie- und Bioingenieurwissenschaften, ETH Hönggerberg, CH-8093 Zürich, Switzerland	Since 2000
ETH Zürich	collaboration in the application of laser light scattering in the investigation of enzyme inactivation	Šefčík, Ján, PhD., research associate, Institut für Chemie- und Bioingenieurwissenschaften, ETH Hönggerberg, CH-8093 Zürich, Switzerland	Since 2003
ETH Zürich	AIMs - FP6 project (leader of subproject)	Morbidelli Massimo, Professor, Head of the Group, Institut für Chemie- und Bioingenieurwissenschaften, ETH Hönggerberg, CH-8093 Zürich, Switzerland	Since 2003
Technical University of Trondheim, Norway	bilateral educational project		Since 2003
University of Minho	exchange of students within the Erasmus programme	Department of Biological Engineering, University of Minho, 4710-057 Braga, Portugal	Since 2001
University of Minho	FOODPRO, FP6-project	Vicente Antonio, Assis. Prof., Department of Biological Engineering, University of Minho, 4710-057 Braga, Portugal	Since 2003
C-Tech Innovation Ltd.	FOODPRO, FP6-project, project coordinator	Harrison Michael, senior research engineer, Capenhurst Technology Park, Capenhurst, Chester, CH1 6EH, United Kingdom	Since 2003
Bíltand AB	FOODPRO, FP6-project	Hagner Ulf, president, Bíltand AB, 86013 Stöde, Sweden	Since 2003
Quinta dos Moinhos Novos - Lacticínios, Lda	FOODPRO, FP6-project	Martins Paulo Jorge, managing director, 4830 Póvoa de Lanhoso, Portugal	Since 2003
Naturediet Pet Foods Ltd	FOODPRO, FP6-project	Orrow Robin, chairman, Pickhurst Road, Chiddingfold, Surrey, GU8 4YD, United Kingdom	Since 2003
Anraith Bia Mhara an Daingean Teoranta t/a Dingle Seafood Soup Company	FOODPRO, FP6-project	Clifford Artie, general manager, Ballyhea, Dingle, Co. Kerry, Ireland	Since 2003
National University of Ireland. University College, Cork	FOODPRO, FP6-project	Gallagher Maria, Dr., lecturer, Department of Process Engineering, University College Cork, Ireland	Since 2003
SIK , The Swedish Institute for Food and Biotechnology	FOODPRO, FP6-project	Lindbom Ingela, Dr., researcher, P.O. Box 5401, Gothenburg, SE-402 29 Sweden	Since 2003

Institution	Type of cooperation	Responsible person	Duration
Instituto de Investigaciones Marinas, C.S.I.C., Vigo	FOODPRO, FP6-project	Banga Julio, Dr., team leader, Process Eng. Group, Inst. Invest. Marinas (CSIC), C/ Eduardo Caballero 6, 36208 Vigo, Spain	Since 2003
University of Dortmund	AIMs, FP6-project, project coordinator	Górak Andrzej, professor, chairman, Lehrstuhl für thermische Verfahrenstechnik, Emil-Figge-Straße 70, 44227, Dortmund, Germany	Since 2003
Bayer AG,	AIMs, FP6-project	Strube Jochen, Dr. Bayer Technology Services, Process Technology, 51368 Leverkusen, Germany	Since 2003
Università di Bologna	AIMs, FP6-project	Sarti Giulio, professor, Dipartimento di Ingegneria Chimica Mineraria e delle Tecnologie Ambientali, viale Risorgimento 2, 40136 Bologna, Italy	Since 2003
Merck KGaA	AIMs, FP6-project	Schulte Michael, Dr., Life Science & Analytics R&D Technical Support, Frankfurter Strasse 250, 64271 Darmstadt, Germany	Since 2003
University of Vienna	AIMs, FP6-project	Lindner Wolfgang, professor, Department of Analytical Chemistry, Waehringerstrasse 38, 1090 Wien, Austria	Since 2003
Prometics Biosciences Ltd	AIMs, FP6-project	Burton Steven James, Dr., 211 Cambridge Science Park, Milton Road, CB4 0ZA Cambridge, United Kingdom	Since 2003
Abo Akademi University	AIMs, FP6-project	Lindén Mika, professor, Department of Physical Chemistry, Porthansgatan 3-5, 20500 Turku, Finland	Since 2003
Centre National de la Recherche Scientifique	AIMs, FP6-project	Denoyel Renaud, Dr., researcher, Laboratoire Matériaux Divisés, Revêtements, Electrocéramiques (MADIREL), Centre de St Jérôme, 13397 Marseille, France	Since 2003
Budapest University of Technology and Economics	AIMs, FP6-project	Simándi Béla, Dr., Department of Chemical Engineering, Pf. 91, H-1521 Budapest, Hungary	Since 2003
Centralny Instytut Ochrony Pracy	AIMs, FP6-project	Jedryka-Goral Anna, professor, Department of Ergonomics, Czerniakowska 16, 00-701 Warsaw, Poland	Since 2003
DECHEMA, Society for Chemical Engineering and Biotechnology e. V.	AIMs, FP6-project	Track Thomas, Dr., Research Management, Administration and Conferences, Theodor-Heuss-Allee 25, 60486 Frankfurt am Main, Germany	Since 2003
DSM Biologics	AIMs, FP6-project	Mol Olaf, Dr., Process Development, Groningen, The Netherlands	Since 2003
Elsevier Ltd	AIMs, FP6-project	Weaver Amanda, Department of Materials Science & Engineering, The Boulevard, Langford Lane, OX5 1GB, Kidlington, United Kingdom	Since 2003
GVS S.p.A	AIMs, FP6-project	Gaeta Soccorso, Dr., Via Roma 50, I-40069 Zola Predosa (Bologna), Italy	Since 2003
Instituto Superior Técnico	AIMs, FP6-project	Aires Barros Maria Raquel, Dr., Centre for Biological and Chemical Engineering, Av. Ruvisco Pais 1, 1049-001 Lisboa, Portugal	Since 2003
Technical University of Lodz	AIMs, FP6-project	Bujacz Grzegorz, professor, X-ray Analysis Laboratory, Institute of Technical Biochemistry, Stefanowskiego 4-10, 90-924 Łódź, Poland	Since 2003
Politecnico di Milano	AIMs, FP6-project	Cavallotti Carlo, Dr., Dept. Chimica, Mat. e Ing. Chimica, via Mancinelli 7, I-20131 Milano, Italy	Since 2003
Ecole Nationale Supérieure de Chimie	AIMs, FP6-project	Fajula Francois, Dr., Laboratoire de Matériaux Catalytiques et Catalyse en Chimie Organique - UMR 5618, 8, rue de l'Ecole Normale, 34296 Montpellier, France	Since 2003
Sartorius AG	AIMs, FP6-project	Melzner Dieter, Dr., Weender Landstrasse 94-108, 37075 Göttingen, Germany	Since 2003

Institution	Type of cooperation	Responsible person	Duration
Syncom BV	AIMs, FP6-project	Viser Ton, Dr., Kadijk 3, PO BOX 2253, 9704 CE Groningen, The Netherlands	Since 2003
University of Twente	AIMs, FP6-project	de Haan Andre, professor, Department of Science & Technology, Separation Technology Group, PO BOX 217, 7500 AE Enschede, The Netherlands	Since 2003
University of Twente	AIMs, FP6-project	Wessling Matthias, professor, Membrane Technology Group, Faculty of Science and Technology, PO BOX 217, 7500 AE Enschede, The Netherlands	Since 2003
Xeptagen S.p.A	AIMs, FP6-project	Fassina Giorgio, Dr., Via A. Olivetti 1, I-80078 Pozzuoli, Italy	Since 2003

C. Membership in Domestic Organizations and Societies

Name	Organisation or Society	Position	Valid date
Bafrnec Milan	Scientific Board of the Rubber Research Institute	member	01.01.1997
Bafrnec Milan	Slovak Society of Chemical Engineering	member	03.05.1995
Bobok Daniel	Slovak Society of Chemical Engineering	member	03.05.1995
Graczová Elena	Slovak Society of Chemical Engineering	member	03.05.1995
Bafrncová Soňa	Slovak Society of Chemical Engineering	member	03.05.1995
Besedová Eva	Slovak Society of Chemical Engineering	member	03.05.1995
Steltenpohl Pavol	Slovak Society of Chemical Engineering	member	03.05.1995
Ordogová Marta	Slovak Society of Chemical Engineering	member	03.05.1995
Herzán Ľubomír	Slovak Society of Chemical Engineering	member	03.05.1995
Bobok Daniel	Certificate Commmission of STU Bratislava	member	15.03.2003
Timár Pavel	Slovak Society of Chemical Engineering	secretary	01.02.1995
Markoš Jozef	Slovak Society of Chemical Engineering (advisory board)	other	Since 2000
Jelemenský Ľudovít	Slovak Society of Chemical Engineering (advisory board)	other	Since 2000
Stopka Ján	Slovak Society of Chemical Engineering (advisory board)	other	Since 2000
Vladimír Bálež	Slovak Society of Chemical Engineering	chairman	Since 2002
Milan Polakovič	Slovak Society of Chemical Engineering Executive Board	other	Since 2002
Milan Polakovič	Chemical Papers - editorial board	other	Since 1998
Báleš Vladimír	Vlákná a textil - editorial board	other	Since 2003
Steltenpohl Pavol	Programme Committee of the 31th International Conference of the Slovak Society of Chemical Engineering (May 2004, Tatranské Matliare)	member	May 24-28, 2004
Steltenpohl Pavol	Chemical Papers journal, Vol. 58(1) and 58(6)	other	2004
Schlosser Štefan	Slovak Society of Chemical Engineering (council)	other	2001-2004
Štefuca Vladimír	Slovak Society of Chemical Engineering	member of executive board	Since 2000
Polakovič Milan	Chemical Papers	guest editor	Since 1999

D. Membership in International Organisations and Societies

Name	Organisation or Society	Position	Valid date
Markoš Jozef	Working party "Chemical Reaction Engineering" of EFCE	member	Since 2002
Stopka Ján	Working party "Education" of EFCE	member	Since 2002
Jelemenský, Ľudovít	Working party „Loss prevention and safety“ of EFCE	member	Since 2004
Báleš, Vladimír	European Federation of Chemical Engineering (executive committee)	other	Since 2002
Báleš, Vladimír	WP Bioreactor Performance EFB	member	Since 1988
Schlosser, Štefan	European Membrane Society	member	continually
Schlosser, Štefan	Working party Membranes of EFCE (delegate)	other	
Schlosser, Štefan	Member of the Scientific committee of the Congress CHISA in Prague, (www.chisa.cz/2004/)	other	continually

Name	Organisation or Society	Position	Valid date
Schlosser, Štefan	Euromembrane 2004, Hamburg (scientific committee)	other	2004
Schlosser, Štefan	Water Environment-Membrane Technology, Seoul (scientific committee)	other	2004
Polakovič Milan	Section on Applied Biocatalysis of European Federation of Biotechnology	member of scientific committee	Since 1999
Polakovič Milan	European Federation of Biotechnology, Section on Biochemical Engineering, Working Group on Biotransformations	chairman	Since 2004
Polakovič Milan	Biocatalysis and Biotransformation	guest editor	2004

E. Visitors from abroad

Name	Organisation or Institution	State	Date / Duration
Drahoš, J.,	ICPF, Praha	CZ	October/1 day
Ditl, P.	Prague Institute of Technology	CZ	October/1 day
Marek, M.	VŠCHT Praha	CZ	October/1 day
Hanika, J.	ICPF Prague	CZ	October/1 day
Wichterle, K.	TU Ostrava	CZ	October/1 day
Machač, I.	VŠCHT Pardubice	CZ	October/1 day
Teixeira, J., A.	University of Minho	Portugal	May, 2 days
Görner Tatiana	Institute National Polytechnique de Lorraine, Laboratoire Environnement et Minéralurgie, CNRS UMR 7569, Vandoeuvre	France	May 2004 (6 days), December 2004, (5 days)
Sorrenti Estelle	Institute National Polytechnique de Lorraine, Laboratoire Environnement et Minéralurgie, CNRS UMR 7569, Vandoeuvre	France	May 2004 (6 days)
Bryjak Jolanta	Wroclaw Technical University, Institute of Chemical Engineering, Wroclaw, Poland	Poland	July 2004 (7 days), August 2004 (15 days), September 2004 (11 days)
Wilinska Alina	Wroclaw Technical University, Institute of Chemical Engineering, Wroclaw, Poland	Poland	July 2004 (4 days)

F. Visits of Staff Members and Postgraduate Students in Foreign Institutions

Name	Organisation / Institution / Conference	State	Date / Duration
Schlosser S.	University of Oviedo, Dept. Chemical Engineering, Oviedo, Spain,	Spain	July, 5 days
Markoš, J.	VŠCHT Praha,	CR	June, 2 days
Jelemenský, Ľ:	11th International Symposium „Loss Prevention and Safety Promotion in the Process Industries, Praha	CR	June, 5 days
Krajčiová, M.	11th International Symposium „Loss Prevention and Safety Promotion in the Process Industries, Praha	CR	June, 5 days
Mierka, O., Jr.	11th International Symposium „Loss Prevention and Safety Promotion in the Process Industries, Praha	CR	June, 5 days
Kiša, M.	11th International Symposium „Loss Prevention and Safety Promotion in the Process Industries, Praha	CR	June, 5 days
Holíková, K.	11th International Conference CHISA, Praha,	CR	August, 5 days
Jelemenský, Ľ.	11th International Conference CHISA, Praha,	CR	August, 5 days
Juraščík, M.	11th International Conference CHISA, Praha,	CR	August, 5 days
Kiša, M.	11th International Conference CHISA, Praha,	CR	August, 5 days
Jelemenský, Ľ.	Technical University, Berlin	D	October, 3 days
Jelemenský, Ľ:	PRISM, Amsterdam	NL	June, 1 day
Jelemenský, Ľ.	Snapproggetti, Bruxelles	Belgium	April, 2 day
Jelemenský, Ľ:	EU, Bruxelles	Belgium	November, 1 day
Illeová Viera	ETH Zuerich	Switzerland	February 2004 (3 weeks)
Ačai Pavel	INPL-CNRS-UMR Nancy	France	November 2004 (11 days)
Polakovič Milan	INPL-CNRS-UMR Nancy	France	November 2004 (11 days)

Name	Organisation / Institution / Conference	State	Date / Duration
Polakovič Milan	Seminar Industrial Biotechnology and Sustainable Chemistry: Perspectives and Policy Issues, Brussels	Belgium	January 2004 (2 days)
Polakovič Milan	Meeting of the Scientific Committee of the Section on Applied Biocatalysis of European Federation of Biotechnology	Belgium	January 2004 (2 days)
Polakovič Milan	Opening meeting of the FP6 project - FOODPRO, Braga	Portugal	April 2004 (4 days)
Polakovič Milan	Kick-off meeting of the FP6 project AIMS, Leverkusen	Germany	April 2004 (3 days)
Polakovič Milan	Meeting of the FP6 project - FOODPRO, Chester	U.K.	June-July 2004 (4 days)
Polakovič Milan	Meeting of the FP6 project AIMS, Leverkusen	Germany	June 2004 (1 day)
Polakovič Milan	Meeting of the FP6 project AIMS, Frankfurt	Germany	September 2004 (1 day)
Polakovič Milan	Meeting of the FP6 project AIMS, Zürich	Switzerland	December 2004 (2 days)
Polakovič Milan	Fluka Buchs	Switzerland	December 2004 (1 day)
Polakovič Milan	SPICA 2004 - conference on preparative chromatography, Aachen	Germany	October 2004 (4 days)
Polakovič Milan	1st Workshop Enzyme Technology and Biocatalysis, Graz	Austria	November 2004 (3 days)
Antošová Monika	SPICA 2004 - conference on preparative chromatography, Aachen	Germany	October 2004 (4 days)
Gramblička Michal	SPICA 2004 - conference on preparative chromatography, Aachen	Germany	October 2004 (4 days)
Platková Zdenka	1st Workshop Enzyme Technology and Biocatalysis, Graz	Austria	November 2004 (3 days)
Wilinska Alina	1st Workshop Enzyme Technology and Biocatalysis, Graz	Austria	November 2004 (3 days)
Gramblička Michal	Workshop on industrial chromatography within the FP6 project AIMS, Darmstadt	Germany	July 2004 (4 days)

VII. THESES AND DISSERTATIONS

A. Graduate Theses (Bc Degree) for state examinations after three years of study

Name	Title of Thesis	Supervisor
Brežný, M.	Analysis of chosen energy media management under real industrial conditions	O. Mierka
Hucík, M.	Modeling of a semi-flow bioreactor for gluconic acid fermentation	J. Markoš
Chlebovec, M.	Description of V-L equilibrium and its application in extractive distillation	P. Steltenpohl
Kochan, J.	Modeling of a flow stirred reactor for complex reactions	J. Markoš
Kostrová, Z.	Equilibrium characteristics of zeolites	E. Besedová
Lašák, P.	Modeling of a flow tube reactor for complex reactions	J. Markoš
Neophytou, M.	Influence of NMP on relative volatility of heptane to toluene	Gracsová, E.
Roschig, M.	Analysis of chosen energy media management under real industrial conditions	O. Mierka
Sand, F.	Analysis of chosen energy media management under real industrial conditions	O. Mierka
Sláva, J.	Modeling of a cascade of flow mixed reactors for complex reactions	J. Markoš
Stanková, M.	Determination of adsorption heat for a chosen adsorption system	E. Besedová
Szekelyová, M.	Analysis of chosen energy media management under real industrial conditions	O. Mierka
Vaňková, K.	Design of the production of pure fructosyltransferase	Antošová, M.

B. Graduate Theses (MS Degree) for state examinations after five years of study

Name	Title of Thesis	Supervisor
Birešová – Lachová, M.	Energy audit of an enterprise	O. Mierka
Bzdilová, M.	Analysis of malt kilning aimed at reducing its energy consumption	P. Timár
Doležel, P.	Energy audit of an enterprise	O. Mierka
Dovalová – Bálintová, L.	Treatment of V-L equilibrium data of three component systems	E. Gracsová
Fabiny, R.	Modelling of fermentation in air-lift reactors	J. Markoš
Gramblička, M.	Study of adsorption equilibria on industrial ion exchangers	Š. Schlosser

Name	Title of Thesis	Supervisor
Kršačková, E.	Measurement, correlation and prediction of two-phase multicomponent systems	E. Graczoová
Labovský, J.	Creation of a software for risk assessment in chemical industry	Ľ. Jelemenský
Matušková, V.	Modelling of absorption of chlorine in aqueous solutions	J. Markoš
Mészárosová, Z.	Design of a temperature regime of melt cooling in the production of crystals	J. Stopka
Motajová, M.	Study of the kinetics of enzymatic reactions by flow microcalorimetry	V. Štefuca
Pavlanský, P.	Calculations of complex networks of pipes	J. Stopka
Sulíková, M.	Analysis of the process of paper drying aimed at reducing its energy consumption	P. Timár
Švandová, Z.	Safety analysis of chemical reactors	Ľ. Jelemenský
Szitás, A.	Heat transfer in vulcanization presses	M. Bafnec

C. Dissertations (PhD)

Name	Title of Thesis	Supervisor
Blažej, M.	Study of hydrodynamics and oxygen mass transfer in an airlift reactor	J. Markoš
Grznárová, G.	Transport phenomena in chromatographic bioseparations	Polakovič, M.

D. Dissertations (DSc)

Name	Title of Thesis
Markoš, J.	Modelling of chemical reactors

E. Habilitation Theses

F. Inauguration Theses

Name	Title of Thesis
Markoš, J.	Modelling of chemical reactors- effective tool for design and optimisation, October 2004

VIII. PUBLICATIONS

Books, Chapters in monographs

- [1] Timár, P.: Material and Energy Balances of Paper Drying Učebné texty v rámci kurzu pre MONDI-SCP a.s. Ružomberok, 48 s. Bratislava, 2004.
- [2] Timár, P.: Basics of Drying Pulp and Paper Učebné texty v rámci kurzu pre Neusiedler-SCP a.s. Ružomberok, 50 s. Bratislava, 2004.
- [3] Bakoš, D., Berkeš, D., Biskupič, S., Čertík, M., Dvoran, J., Izakovič, M., Kovařík, P., Mierka, O., Ondrejčovičová, I., Šajbidor, J.: Information technologies in education. In: Nové trendy v chémii. Vydavateľstvo STU, Bratislava, 17-22 (2004). ISBN 80-227-2026-0

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- [1] Blažej, M., Annus, J., Markoš, J. Comparison of gassing-out and pressure-step dynamic methods for kLa measurement in an airlift reactor with internal loop Trans IChemE, Part A: Chemical Engineering Research and Design, 82 (2004), 1375 – 1382.
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- [3] Blažej, M., Juraščík, M., Annus, J., Markoš, J. Measurement of mass transfer coefficient in an airlift reactor with internal loop using coalescent and non-coalescent media J. Chem. technol. Biotechnol., 79 (2004) 1405-1411
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- [6] Grznárová, G., Polakovič, M., Ačai, P., and Görner, T.: Extra-column dispersion of macromolecular solutes in aqueous-phase size-exclusion chromatography. J. Chromatogr. A, 1040(1), 2004, 33-43.

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- [9] Krajčiová, M., Jelemenský, L., Kiša, M., Markoš, J.: Model predictions on self-heating prevention of stockpiled coals Journal of Loss Prevention in Process Industries, 17, (2004) 205 - 216
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- [11] Malik, F., Štefuca, V., Bálež, V.: Investigation of kinetics of immobilized liver esterase by flow calorimetry J. Mol. Catal. B: Enzymatic 29, 84-87 (2004).
- [12] Molnár, A., Krajčiová, M., Markoš, J., Jelemenský, L.: Use of bifurcation analysis for identification of a safe CSTR operability J. of Loss Prevention in Process Industries, 17, (2004), 489 - 498
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- [22] Juma, M., Bafnec, M.: Experimental Determination of Rubber Curing Reaction Heat Using the Transient Heat Conduction Equation Chem. Pap. 58 (1), 29-32 (2004)
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- [2] Mierka, O., Stopka, J., Mierka, O., Jr: Rozšírenie kogeneračnej jednotky na trigeneračnú výrobu energetických médií Ropa, uhlie plyn a petrochémiá, 45 (3-4), 2003, s. 15 – 20

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- [1] Schlosser, Š., Marták, J.: Ionic liquids in pertraction and extraction of organic acids In: Invited lecture at University of Oviedo (E) PPr

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- [1] Bakalár, T.*, Schlosser, Š., Búgel, M.: Hybrid Adsorption and Microfiltration Process for Removal of Metals from Aqueous Solutions In: CHISA 2004, full text on CD ROM, Publisher: ČSCHI, Praha (CZ), ISBN 80-86059-40-5, 10 pp.

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- [4] Bakalár, T.*, Schlosser, Š., Bügel, M.: Development of Hybrid Adsorption and Microfiltration Process for Removal of Copper from Aqueous Solutions In: 31th Conference of SSCHI, full paper on CD ROM, Eds: Markoš, J., Štefuca, V., Tatranské Matliare (SK), 2004, ISBN 80-227-1922-6. 13 pp.
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Contracts

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- [8] Jelemenský, L.: Risk assessment for Duslo Šaľa, a.s.-chemistry of chlorine ZoD Šaľa 87/2004 – Dodatok 1
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- [11] Jelemenský, L.: Risk assessment for NCHZ, a.s.- production of VC and PVC ZoD 26/2004 pre NCHZ, a.s.
- [12] Jelemenský, L.: Pilot project for safety analysis of Slovnaft, a.s. ZoD 123/2004 pre VURUP, a.s
- [13] Markoš, J.: Measurement of physical characteristics of slaked lime ZoD 122/2004 – Calmit, spol. s r.o
- [14] Markoš, J.: Design of a reaction-distillation column for the production of propylenoxide from propylenchlorhydrine ZoD 27/2004 – časť A, Zadávatel': NCHZ, a.s
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- [16] Marták, J., Langfelder, I.: Determination of qualitative parameters of break liquid ZoD 10/2004. Volkswagen Bratislava
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- [19] Molnár, A.: Separation of multicomponent mixture with batch distillation. Additional simulation cases ZoD 4/2004, Zadávatel': CIBA Spezialitätenchemie Grenzach GmbH, Kochlinstrasse 1, D-79639 Grenzach-Wyhlen
- [20] Stopka, J.: Possibilities of employment of "smooth water" in pipelines for hot water ZoD 109/2004 pre VUJE, a.s., Trnava
- [21] Šutý, Š., Timár, P.: Advanced course papermaker operator 1. ZOD č. 65/2004
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Grants

- [1] Báleš, V., zodpovedný riešiteľ Design and optimisation of bubbled column reactors Grant VEGA 1/0066/03
- [2] Báleš, V.: Eurocompetencies transfer in vocational guidance for young specialists in bioscience field Grant. Leonardo da Vinci Pilot Project RO/00/B/F/PP141028.
- [3] Báleš, V.: Norwegian Competencies Transfer into New Curricula of Environmental Engineering Education at the Slovak University of Technology in Bratislava Grant. Plan of Action for Candidate Countries to the EU (Slovak-Norwegian Project)
- [4] Jelemenský, L., zodp. riešiteľ: Design of a system for quantitative evaluation of chemical reactors safety Grant. VEGA 1/1377/04
- [5] Jelemenský, L., zodp. riešiteľ: Process Industries Safety Management – thematic network on human factors Grant. G1RT – CT –2001 – 05029
- [6] Markoš, J., zodp. riešiteľ: Mechanism of a coal particle combustion in lean oxygen conditions Grant. VEGA 1/0064/03
- [7] Polakovič, M.: Advanced interactive materials by design Grant. Projekt 6. rámcového programu EÚ, NMP3-CT-2004-500160
- [8] Polakovič, M.: Kinetic and transport phenomena in enzyme technologies Grant. VEGA project, 1/0065/03
- [9] Polakovič, M.: Mechanisms of adsorption on heterogeneous surfaces. Applications to environmental problems Grant. Program Štefánik, projekt č. 30
- [10] Polakovič, M.: Ohmic heating for food processing Grant. Projekt 6. rámcového programu EÚ, SME-2003-1-508374
- [11] Stopka, J.: Synthesis of polycrystalline indium phosphide and its characterization Grant. APVT-99—18602
- [12] Štefuca, V.: Isolation and investigation of the properties of bioactive compounds of amarant and their application in human nutrition Grant. Štátna objednávka

- [13] Štefuca, V.: Complex processing of alfaalfa as a renewable energy source combining classical and biotechnological procedures Grant. APVT project, 99-005002

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Others

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- [2] Markoš, J.: Modelling of chemical reactors Doktorská dizertácia, FCHPT STU, október 2004
- [3] Schlosser, Š.: PERMEA 2003 - Preface Desalination. 162, (2004) ix-xx.
- [4] Timár, P.: Material and Energz Balances of Paper Drying Učebné texty v rámci kurzu pre MONDI-SCPa.s.Ružomberok, 48 s. Bratislava, 2004.
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- [6] Bakoš, D., Berkeš, D., Biskupič, S., Čertík, M., Dvoran, J., Izakovič, M., Kovařík, P., Mierka, O., Ondrejkočičová, I., Šajbidor, J.: Information technologies in education. In: Nové trendy v chémii. Vydavateľstvo STU, Bratislava, 17-22 (2004). ISBN 80-227-2026-0
- [7] Jelemenský, L. Reliable safety analysis of a chemical reactor with nonlinear behaviour PIPES - postgraduate International Process Engineering School, TU Berlin, October the 7th, 2004, 11 pp.

DEPARTMENT OF CHEMICAL PHYSICS

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I. STAFF

Full Professors:
Fedor Valach, PhD, DSc

Associate Professors:
Pavol Fedorko, PhD; Oľga Holá, PhD; Viliam Laurinc, PhD; Vladimír Lukeš, PhD

Assistant Professors :
Július Annus; Ladislav Bušovský; Tibor Pálszegi, PhD; Ľubomír Tancer; Miroslav Tokarčík, PhD; Daniela Žilinská
Research Fellows:

PhD Students:
Michal Ilčin; Katarína Olejníková

Technical staff:
Anton Adamko; Marián Babnič; Zdenka Halaburková

II. TEACHING AND RESEARCH LABORATORIES

A. Teaching laboratories:

Laboratory of Physics I.
Laboratory of Physics II.

B. Research laboratories:

Laboratory of X-ray Diffraction
Laboratory of Electrical Properties of Conducting Polymers
Laboratory of Gamma Radiation Source
Laboratory of Computational Chemical Physics

III. TEACHING

A. Undergraduate Study:

1. semester (Bc)	Seminar in Basic Physics	0/2/ 0	Bušovský, Fedorko, Holá, Laurinc, Lukeš, Pálszegi, Tancer, Tokarčík, Valach, Žilinská
1. semester (Bc)	Physics I	2/2/ 0	Bušovský, Fedorko, Holá, Laurinc, Lukeš, Tokarčík, Žilinská
	Physics Laboratory I.	0/0/ 2	Annus, Bušovský, Pálszegi, Tancer, Tokarčík, Žilinská
1. semester (Bc)	Physics II.	2/2/ 0	Holá, Laurinc, Lukeš, Tokarčík, Valach, Žilinská
	Physics Laboratory II.	0/0/ 2	Annus, Bušovský, Pálszegi, Tancer, Žilinská
	Physics I.	2/2/ 0	Fedorko
1. semester (Bc)	Semestral project	0/0/ 4	Lukeš
	Modelling of the Molecular Properties	2/2/ 0	Laurinc, Lukeš
1. semester (Bc)	Statistical Thermodynamics	2/1/ 0	Laurinc, Lukeš

IV. CURRENT RESEARCH PROJECTS

VEGA Project No 1/0056/03 Interaction geometry of transition element atom with ligands in coordination compounds and metalloproteins (Fedor Valach)

A new bond valence sum model of interactions between the metal atom of dn and fn electron configurations and ligands in the crystal structures of coordination compounds and metalloproteins. Development of structural theory which enables the prediction of transition metal surrounding geometry within the range of metal oxidation states. Deriving the rules for the occupation of the crystal sites by the transition element atoms in the certain oxidation states of metalloproteins. Development of new refinement and validation procedure for the crystal structures of metalloproteins. Crystal structure refinement of *Urtica dioica* agglutinin isolectin I with Zn^{+2} ions. Prediction of murine monoclonal antibody 1696 complexation with transition metals.

Project duration: from 01.01.2003 to 31.12.2005

VEGA No 1/0055/03 Theoretical and experimental study of the electrical and optical properties of new pi-conjugated aromatic and heteroaromatic compounds as precursors for the preparation of oligomers and nanostructures (Viliam Laurinc)

Quantum-chemical study of the electronic structure and properties of benzenoid and heterocyclic compounds of furan, thiophene, pyrrole, imidazole and pyrazine derivatives with potential electro- and photoactive properties. Theoretical investigation of the basic relations between structure (conformations, effective conjugation length, effect of substituents) and microscopic quantities (dipole moments, polarizabilities, hyperpolarizabilities, HOMO-LUMO separation), and absorption and luminescence spectral characteristics. Measurements of the electrical conductivity of the prepared polymerised pi-conjugated structures. Study of the stability of the prepared compounds under gamma-irradiation (source ^{60}Co)

Project duration: from 01.01.2003 to 31.12.2005

V. CURRENT EDUCATION PROJECTS

A. KEGA Project No 3/108003 Interactive Multimedial Project for Teaching of Physics at Technical Universities in Slovak Republic (Viliam Laurinc, Oľga Holá)

Development of teaching methods on physics lectures at technical university, particularly at the Faculty of Chemical and Food Technology of SUT.

Project duration: from 01.01.2003 to 31.12.2005

B. Institutional Project No. 302/03 The creation of new didactic methods in teaching of physics with applications in e-learning and distance learning (Oľga Holá)

The cooperation at the creation of the multimedia textbook of physics.

Project duration: from 01.01.2003 to 31.12.2005

VI. COOPERATION

A. Cooperation in Slovakia

Institution	Type of cooperation	Responsible person	Duration
Faculty of Electrical Engineering and Information Technology, SUT Bratislava	e-learning	Assoc.prof. P.Ballo, PhD	2000-
Faculty of Mathematics and Physics, Comenius University, Bratislava	Monitoring of R_n in atmosphere, water and soil	Assoc.prof. K. Holý, PhD	1990-
Faculty of Civil Engineering, SUT Bratislava	Didactic methods	Assoc.prof. J.Lukovičová, PhD	2000-
Institute of Polymers, Slovak Academy of Sciences, Bratislava	Optical measurements of polymers	Prof. P.Hrdlovič, DSc	2000-
Faculty of Natural Science, Comenius University, Bratislava	Simulations of linear and nonlinear optical signals	Dr. V.Szőcs, PhD	2000-

Institution	Type of cooperation	Responsible person	Duration
Faculty of Mathematics and Physics, Comenius University, Bratislava	e-learning	Mgr. K.Holá	2003-

B. International Cooperation

Institution	Type of cooperation	Responsible person	Duration
Institut für Organische Chemie, J.W.Goethe Universität, Frankfurt/M., Germany	X-ray crystallographic research	Prof. E.Egert	1988-
Institute of Molecular Genetics, Academy of Sciences, Prague, Czech Republic	Protein synthesis	Ing. J.Sedláček	2003-
Institut für Physikalische Chemie, Universität Wien, Vienna, Austria	Electronic excitation transport in polymers	Prof. H.F.Kauffmann	1997-
Institute of Chemistry, University of Wroclaw, Wroclaw, Poland	X-ray crystallographic research	Dr. R.Grobelny	1989-
Laboratoire de Cristallographie, Université de Genève, Switzerland	X-ray crystallographic research	Prof. A.F.Williams	2001-
Chemical Crystallography Laboratory, Oxford University, Oxford, UK	X-ray crystallographic research at low temperatures, crystallographic statistics	Prof. C.K.Prout	1999-
Commissariat a l'Energie Atomique, Grenoble, France	Conducting polymers	Dr. J.P.Travers	1999-
Institute of Macromolecular Chemistry, Academy of Sciences, Prague, Czech Republic	Conducting polymers	Dr. J.Stejskal	2003-
Max-Planck Institut für Festkörperphysik, Stuttgart, Germany	Carbon nanotubes	Dr. S.Roth	2000-

C. Membership in Domestic Organizations and Societies

Name	Organisation or Society	Position	Valid date
Holá Oľga	Union of Slovak Mathematicians and Physicists, Bratislava	member	1970
Laurinc Viliam	Union of Slovak Mathematicians and Physicists, Bratislava	member	1975
Bušovský Ladislav	Union of Slovak Mathematicians and Physicists, Bratislava	member	1975
Fedorko Pavol	Union of Slovak Mathematicians and Physicists, Bratislava	member	1977
Holá Oľga	Slovak Physical Society, Bratislava	member	1993
Laurinc Viliam	Slovak Physical Society, Bratislava	member	1993
Valach Fedor	Slovak Physical Society, Bratislava	member	1993
Bušovský Ladislav	Slovak Physical Society, Bratislava	member	1993
Fedorko Pavol	Slovak Physical Society, Bratislava	member	1993
Valach Fedor	Slovak Chemical Society, Bratislava	member	1970

D. Membership in International Organisations and Societies

Name	Organisation or Society	Position	Valid date
Valach Fedor	International Society for Theoretical Chemical Physics, Erlangen, Germany	member	1990
Laurinc Viliam	International Society for Theoretical Chemical Physics, Erlangen, Germany	member	1990
Fedorko Pavol	European Physical Society	member	1994
Valach Fedor	European Physical Society	member	1994
Holá Oľga	European Physical Society	member	1994

E. Visitors from abroad

Name	Organisation or Institution	State	Date / Duration
Egert E.	Institut für Organische Chemie, Universität Frankfurt/M	Germany	Sept. 2005 (7 days)
Ondráček J.	Institute of Molecular Genetics, Academy of Sciences, Prague	Czech Republic	Sept. 2005 (2 days)

F. Visits of Staff Members and Postgraduate Students in Foreign Institutions

VII. THESES AND DISSERTATIONS

A. Graduate Theses (Bc Degree) for state examinations after three years of study

Name	Title of Thesis	Head of board
Šolc R.	Theoretical study of dendrimeric systems of zero and first generation on the basis of phenyl-acetylene	Lukeš V.

B. Graduate Theses (MS Degree) for state examinations after five years of study

Name	Title of Thesis	Head of board
Matuszná K.	Quantum-chemical calculations and linear optical spectroscopy of [n,n] paracyclophanes	Lukeš V.
Ilčin M.	Application of the perturbation theory to the study of the intermolecular interaction between open and closed shell systems	Laurinc V., Lukeš V.

VIII. PUBLICATIONS

Books, Chapters in monographs

- [1] Ožvoldová M., Ballo P., Červeň I., Dillinger J., Fedorko P., Halúsková S., Holá O., Jančuška I., Krajčovič J., Kvetan K., Laurinc V., Štubňa I.: e-fyzika, základný bakalársky kurz pre technické univerzity. www.kf.sjf.stuba.sk/stu_online, 2003, doplnenie kapitol e-physics, basic lectures for universities of technology, www.kf.sjf.stuba.sk/stu_online, 2003.

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- [1] Blažej, M., Annus, J., Markoš, J.: Comparison of gassing-out and pressure-step dynamic methods for kLa measurement in an airlift reactor with internal loop. *Chemical Engineering Research and Design* 82, 1375–1382, (2004).
- [2] Bugár, I., Kováč, J., Matuszná, K., Lukeš, V., Čík, G.: Polymer Structure Characterization of Polythiophenes by Fluorescence Spectroscopy in Solution. *Laser Physics*. 14, 1-6, (2004).
- [3] Lukeš, V., Breza, M.: On the geometry, electrical properties and optical spectra of spirobifluorene type molecules. *J. Mol. Struct.* 699, 93-99 (2004).
- [4] Lukeš, V., Ilčin, M., Laurinc, V., Biskupič, S.: On the structure and physical origin of the interaction between lithium and acetylene molecule. *Chem. Phys.*, 302, 69-76 (2004).
- [5] Lukeš, V., Ilčin, M., Laurinc, V., Biskupič, S.: On the structure and physical origin of the interaction in H2...Cl- and H2...Br- van der Waals anion complexes. *J. Chem. Phys.* 121, 5852-5859 (2004).
- [6] Lukeš, V., Ilčin, M., Laurinc, V., Biskupič, S.: On the structure and physical origin of weak interaction between H and CO. *Czech. Coll. Chem. Commun.*, 69, 1-12 (2004).
- [7] Šeršeň, F., Vencel T., Gáplovský, A., Annus, J.: Použitie fenylglyoxalových ketylových radikálov na testovanie antioxidačného účinku rôznych zlúčenín. *Česká a Slovenská farmace LIII*, 3, 141-144, (2004).
- [8] Teleki A., Obert T.: Evaluation of the 3rd order perturbations for the degenerate cases *J. Math. Chem.*, 35, 329-338 (2004).

Publications registered in CA, FSTA and other ISI databases

- [1] Sekretár, S., Schmidt, Š., Vajdák, M., Zahradníková, L., Annus, J.: Antioxidative and antimicrobial effects of some natural extracts in lard. Czech J. Food Sci. 22 (2004) s. 215-217
- [2] Végh, D., Puterová, Z., Zálupský, P., Végh, Zs., Lukeš, V.: Designer Oligothiophenes via Structurally Defined Building Blocks Annals Polish Chem.Soc., 3, 151-154 (2004).
- [3] Cibulková, Z., Klein, E., Lukeš, V.: On the antioxidant effectiveness of N,N'-substituted p-phenylenediamines. Petroleum and Coal 46, 42-48 (2004).
- [4] Lukeš, V., Cibulková, Z.: On the energetics and torsional effects of selected N,N'-substituted p-phenylenediamines. Petroleum and Coal 45, 109-112 (2004).

Lectures and posters

- [1] Laurinc, V., Lukeš, V., Ilčin, M., Biskupič, S.: On the origin of the weak interactions between hydrogen molecule and halide anions. In: Central European Symposium on Theoretical Chemistry 2004, 30.9.-3.10. 2004, Tihany, Hungary. (Poster)
- [2] Lukeš, V., Pálszegi, T., Matuszová, K., Laurinc, V.: Theoretical study of linear optical properties of [n,n] paracyclophanes. In: Central European Symposium on Theoretical Chemistry 2004, 30.9 - 3. 10, Tihany, Hungary. (Poster)
- [3] Lukeš, V.*: Quantum chemical study of geometry, electronic structure and linear optical properties of conjugated molecules. In: 6. 2. 2004, Wien, pozvaná prednáška.
- [4] Skákalová, V.*, Hulman, M., Fedorko, P., Dettlaf, U., Roth, S.: Properties of gamma-irradiated and functionalized single wall nanotubes buckypaper. In: E-MRS Spring Meeting, Strasbourg, France, May 24-28, 2004, Scientific programme, May 27, 2004.

Text books

- [1] Holá K.*, Holá O.*, Halusková S.*: Usage of Coach at Secondary Schools and Technical Universities. In: Nové trendy ve fyzice. (NTF 2004). 11.-12.11.2004 Brno. Proceedings of the conference: New trends in Physics. University of Technology, Brno. (2004), 304-307, ISBN 80-7355-024-5
- [2] Holá O.*, Halusková S., Dillinger J., Laurinc V.: Experience with the usage of multimedia means in physics education at STU Bratislava. In: Konference Belcom'04, 2.2-3.2.2004 Praha, CZ. In: E-learning v České a Slovenské republice: Stav a perspektivy. Sborník příspěvků. Editor K. Květoň. ČVUT Praha (2004), 87-90. ISBN 80-01-02923-9 (+ CD médium)
- [3] Skákalová, V.*, Hulman, M., Fedorko, P., Lukáč, P., Roth, S.: Effect of gamma-irradiation on single-wall carbon nanotube paper. Molecular Nanostructures, 17th International Winterschool/Euroconference on Electronic Properties of Novel Materials, Kirchberg, Tirol, Austria, March 8-15, 2003, AIP Conference Proceedings, Vol. 685, Melville 2003, ISBN 0-7354-0154-3, pp. 143-147.
- [4] Juraščík, M. (*), Fabiny, R., Vandáková, M., Annus, J., Markoš, J.: Modelling of fermentation of air airlift bioreactor. In: Proceedings of 16th International Congress CHISA 2004, 22 – 26 August, Prague, CZ, full text on CD ROM, ISBN 80-86059-40-5, 13 pp.
Juma, M., Bafnec, M., Brezani, J., Annus, J.: Influence of reinforcement upon the thermal properties of elastomer composites. In: Proc.31th International Conference of SSCHE (Slovakia), May 24-8, 2004, Tatranske Matliare. ISBN 80-227-2052-6, CD-ROM, 12 pp.
- [5] Végh, D., Puterová, Z., Zálupský, P., Végh, Zs., Lukeš, V.: A Convenient Synthesis of Regiospecifically Substituted Oligothiophenes via Structurally Defined Building Bloc In: Sborník konference XXVII. Konference organických chemiků, ed. by P. Pařík, Pardubice, 14.-7.6.2004, ISBN 80-7194-671-0, PO 36 .
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Contracts

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DEPARTMENT OF CHEMICAL TECHNOLOGY OF WOOD, PULP AND PAPER

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I. STAFF

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PhD Students:
Michal Jablonský; Gabriela Szeiffová, Martina Cedzová, Soňa Fignedyová, Attila Sztítás

Technical staff:
Valeria Töröková, Pavol Vančo

II. TEACHING AND RESEARCH LABORATORIES

A. Teaching laboratories:

Laboratory of Chemical Treatment of Wood
Laboratory of Pulping Technology
Laboratory of Structure and Properties of Paper
Laboratory of Wood Chemistry

B. Research laboratories:

Laboratory of Natural Polymers
Laboratory of Papermaking Fibres and Additives
Laboratory of Structure and Analysis of Wood
GC-MS Laboratory

III. TEACHING

A. Undergraduate Study:

1. semester (Bc)	Semestral Project	0/4	members of department
	Paper and Printing	2/2	Krkoška, Panák
1. semester (Bc)	Physics of Polymers and Paper	2/2	Šutý, Chodák
	Natural Polymers	2/1	Bakoš, Vizárová, Šurina
	Chemistry and Analysis of Wood	2	Katuščák, Vizárová
1. semester (Bc)	Pulping Technology	3/1	Vrška, Šutý
	Laboratory I.	8	Vizárová
	Environmental Management in Pulp and Paper Industry	2	Vizárová, Katuščák
1. semester (Bc)	Paper Machines	2/2	Čerňanský
	Engineering of Pulp Production	1/1	Vrška, Šutý
	Paper Technology I.	3/0	Krkoška, Šutý
1. semester (Bc)	Chemical Treatment of Wood I.	3/0	Katuščák, Šurina
	Laboratory II.	8	Šurina, Vrška
	Practical Training Course	3 weeks	
1. semester (Bc)	Chemical Treatment of Wood II.	2/0	Katuščák, Šurina
	Paper Technology II.	3/0	Krkoška, Gigac, Šutý
	Packaging Materials	2/0	Tiňo
	Papermaking aids	2/0	Lužáková, Vizárová

1. semester (Bc)	Laboratory III.	9	Vrška, Šurina, Mišovec, Šutý
	Thesis	30	members of department

IV. CURRENT RESEARCH PROJECTS

VEGA Project No 1/0061/03 Study of the oxidation in chemical processing of wood through new methods of separation and analysis (Svetozár Katuščák).

The elimination of chlorine in bleaching processes and its substitution by hydrogen peroxide, various peroxidic compounds in combination with oxygen, ozone and alkali extraction were studied. The most perspective oxidation agents studied in this project next to oxygen, ozone and hydrogen peroxide are peroxomonosulfuric acid and peracetic acid. Very good results for delignification efficiency, brightness and strength properties of pulp were obtained with combination two stage oxygen delignification and next ozone stage. The reaction products were identified by electroforetic analysis, HPLC and FTIR methods.

Project duration: from 01. 01. 2003 to 31. 12. 2005

VEGA Project No 2/3161/23 Methodology of preparation of new cyclodextrin derivatives with ion-exchanging groups (Igor Šurina).

New derivatives of β -cyclodextrin are prepared by selective introduction of ion-exchanging groups. The point of the project was the preparation of mono-derivatives through tosylation, subsequently modified with quaternary ammonium group. From the epoxy-compound amino-derivative are prepared and quaternized. The prepared mono-derivatives with specifically bonded quaternary ammonium groups are modified with carboxymethyl groups. The derivatives are tested as stationary phases for gas chromatography.

Project duration: from 01. 01. 2003 to 31. 12. 2005

APVT Project No 99-007302 Coated ink jet papers (Štefan Šutý).

The project is realized in cooperation with Pulp and Paper Research Institute in Bratislava. Project research is focused on coated ink jet papers, which as a new generation of paper industry specialties with excellent properties are characterised by high added value. The impact of the physicochemical and structural properties on the interaction between ink and coating are studied. Laboratory research of surface finish and coating of base paper will be done by means of laboratory size press, coater and supercalender. The methods on the coating base paper properties evaluation, coating composition and its components as well as ink jet paper quality will be worked out.

Project duration: from 01. 07. 2002 to 30. 06. 2005

Project of ME SR No 2003 SP 260280C03 Production of new pulp and paper products from wood of lower quality - Effect of fibrous web structure and fibre properties on transfer and qualitative parameters of paper (Štefan Šutý).

The project is realized in cooperation with Pulp and Paper Research Institute in Bratislava. The research in this project is focused on the description of transfer and quality parameters of the paper and board using the physical and mechanical characterization of fibres and structural elements of fibre web. The transfer parameters are initial strength and dewatering of wet paper web. The structure of fibre web will be described by anisotropy of paper, orientation of the fibres, internal strength of the paper, its porosity, distribution of the pores and formations of the paper. The covalence and bending stiffness together with structural components will be used for the prediction of tensile parameters of the materials for corrugated boards. It is being assumed using of research results in development of graphic papers with high ratio of hardwood pulp, magazine papers e.t.c.

Project duration: from 01. 07. 2003 to 31. 12. 2005

Project of ME SR No 2003 č. 661/2003 Preservation, Stabilization and Conservation of Traditional Information Supports in the Slovak Republic (Svetozár Katuščák)

This project covers program of saving, stabilization and conservation of traditional holders of information (books, archival documents etc.). Big portion of cultural heritage stored in historical books and archival documents is endangered with destructive impacts of abiotic and biotic factors. This can cause irretrievable loss of cultural heritage of Slovak Republic. Solving of this problem is divided into two time steps. First includes years 2003 - 2005 and its subject covers basic research. Except of this, second step will also include applied research and development.

Project duration: from 01.10. 2003 to 31.10. 2005

APVT Project No. APVT-20-034202: The deterioration of historical manuscripts and documents related to transitional elements in writing inks (M. Ceppan)

In overall there are 13.1 mil. pieces of threatened documents and manuscripts destined for preservation in the Slovak Republic. Hand written documents (letters, letter sets, drawings, book pages etc.) often contain transitional elements (mainly copper and iron) in their inks which cause and promote destruction and degradation processes of supporting lignocelluloses materials. This project is focused on investigation of ageing process reactions and kinetics by modern optical and spectral methods. Gathered knowledge should contribute to material and method selection positively affecting the durability and capacity of historical documents and manuscripts preservation in feasible economical and ecological conditions

Project duration: from 01.01.2004 to 31.12.2006

V. CURRENT EDUCATION PROJECTS

VI. COOPERATION

A. Cooperation in Slovakia

Institution	Type of cooperation	Responsible person	Duration
NEUSIEDLER SCP a.s. Ružomberok	Lipophilic wood extractives, anionic trash and pitch particles and their interaction with controll additives.	Ján Tomčík, head of CELPAP Division, Neusiedler SCP a.s. Bystrická cesta 13, 03417 Ružomberok	01. 06. 1998 -
Faculty of Natural Science, Comenius University, Bratislava	Determination of by-products of oxidation processes	Kaniansky Dušan, Prof., Mlynská dolina, 842 15 Bratislava	01.01.2003 -
Neusiedler SCP a.s. Ružomberok	Specialized education "Basic course From Wood to Paper"	Jakubík Peter, manager, Bystrická cesta 13, 034 17 Ružomberok	01. 03. - 30. 06. 2003
MONDI BUSINESS PAPER SCP a.s. Ružomberok	Specialized education "Basic course From Wood to Paper"	Jakubík Peter, manager, Bystrická cesta 13, 034 17 Ružomberok	01. 12. 2003 - 30. 06. 2004
MONDI BUSINESS PAPER SCP a.s. Ružomberok	Specialized education "Advanced course From Wood to Paper"	Jakubík Peter, manager, Bystrická cesta 13, 034 17 Ružomberok	01. 03. 2004 - 30. 09. 2004
Institute of Chemistry of Slovak Academy of Sciences, Bratislava	GC - MS analysis of derivatives of cyclodextrin	Šimkovic Ivan, project manager, Dúbravská cesta 9, 845 38 Bratislava	01. 01. 2003 -
Slovak National Library, Martin	Preservation of archived books and documents	Bukovský Vladimír, manager, SNK Martin	5.5.2002-
Pulp and Paper Research Institute, Bratislava	Coated ink-jet papers	Boháček Štefan, president of board, VÚPC Bratislava, Lamačská 3	1.7.2002-
Slovak National Archives, Bratislava	Preservation of archived books and documents, education.	Hanus Jozef, manager, SNA Bratislava	permanently
Pulp and Paper Research Institute, Bratislava	Surface modification of LC materials and evaluation of VOC emissions	Boháček Štefan, president of board, VÚPC Bratislava, Lamačská 3	01.01.2003-
Technical University, Zvolen	Education	Sedliačik Ján, TU Zvolen	permanently

B. International Cooperation

Institution	Type of cooperation	Responsible person	Duration
Dept. of Chem. Technology of Wood, Pulp and Paper, Technical University, Pardubice, Czech Republic	Education	Milichovský Miloslav, Prof. TU Pardubice	

Institution	Type of cooperation	Responsible person	Duration
Library of Congress, Washington, D.C.	Research	Ch. J. Shahani, Chief of Preservation Research & Testing Division	2004-2006
French Institute of Papermaking and Graphics Industry, Grenoble, France	Education and Research	Roux, J. C., professor, Ecole Française de Papeterie et des Industries Graphiques, Grenoble, France	1989 -

C. Membership in Domestic Organizations and Societies

Name	Organisation or Society	Position	Valid date
Vrška Milan	Slovak Chemical Society	member	01.01.1980 -
Vrška Milan	SNAS -acreditation group - for laboratory of PPRI Bratislava	member	23.09.2002 -
Vrška Milan	SUTN -Technical normalization committee - TC 19 - pulp, paper, board	member	26.05.2003 -
Katuščák Svetozár	SUTN -Technical normalization committee - TC 72 - environmental management	member	
Krkoška Pavel	Slovak Chemical Society	member	1979
Katuščák Svetozár	Wood Research , editorial board	member	
Šutý Štefan	Slovenská spoločnosť priemyselnej chémie	member	2002
Polovka Martin	Slovak Chemical Society	member	2002

D. Membership in International Organisations and Societies

Name	Organisation or Society	Position	Valid date
Katuščák Svetozár	European Panel Federation	member	20. 12. 2004
Šutý Štefan	Association of the pulp and paper industry, Czech republic (member of EUCEPA)	member	01. 01. 2000 -
Šurina Igor	Association of the pulp and paper industry, Czech republic (member of EUCEPA)	member	01. 01. 1998 -

E. Visitors from abroad

Name	Organisation or Institution	State	Date / Duration
Milichovský, M.	University Pardubice	Czech Republic	June 2004 (1 day)
Alince, B.	McGill University, Montréal, Québec	Canada	September 2004 (3 days)
Pikulik, I.	PAPRICAN	Canada	August 2004 (3 days)
Barteková, A.	University of Minnesota	USA	June 2004 (1 day)

F. Visits of Staff Members and Postgraduate Students in Foreign Institutions

Name	Organisation / Institution / Conference	State	Date / Duration
Jablonský, M.	XIV. international conference - Papír a celulóza 2004	Czech Republic	June 2004 (1 day)
Cedzová, M.	XIV. international conference - Papír a celulóza 2004	Czech Republic	June 2004 (1 day)
Šutý, Š.	XIV. international conference - Papír a celulóza 2004	Czech Republic	June 2004 (2 days)
Šutý, Š.	European Seminar for Professors of Pulp and Paper Technology	Finland	August 2004 (3 days)
Katuščák, S.	European Seminar for Professors of Pulp and Paper Technology	Finland	August 2004 (3 days)
Katuščák, S.	University of Pardubice - development of cooperation	Czech Republic	June 2004 (2 days)
Katuščák, S.	Possibilities of future cooperation - National Archives - Praha	Czech Republic	August 2004 (3 days)

Name	Organisation / Institution / Conference	State	Date / Duration
Šutý, Š.	Educational activities	Austria	September 2004 (2 days)
Cedzová, M.	International conference Paper Durability	Slovenia	November 2004 (5 days)
Katuščák, S.	International conference Paper Durability	Slovenia	November 2004 (5 days)
Vizárová, K.	International conference Paper Durability	Slovenia	November 2004 (5 days)
Majerčáková, K.	International conference Paper Durability	Slovenia	November 2004 (5 days)
Jurčo, J.	International conference Paper Durability	Slovenia	November 2004 (5 days)
Polovka, M.	Measurments of UV characteristic of paper	Czech Republic	December 2004 (1 day)

VII. THESES AND DISSERTATIONS

A. Graduate Theses (Bc Degree) for state examinations after three years of study

Name	Title of Thesis	Supervisor
Gállová, I.	Patent Research for The Area of Preservation of Historical Books Focused on Facilities.	Cedzová, M.
Majerčáková, K.	Increasing of the Permanence of Archival Documents.	Katuščák, S.
Holeš, M.	Sustainable Packagings.	Katuščák, S.

B. Graduate Theses (MS Degree) for state examinations after five years of study

Name	Title of Thesis	Supervisor
Jančiová, D.	Qualitative classification of historical books of SR from 19.th and 20.th century onto technological groups for deacidification	Mišovec, P.
Klučiarová, Z.	Inhibition and retardation study of the degradation of monosaccharides and polysaccharides	Šurina, I.
Kováčová, M.	Interactions of chosen zirconium compound with pulp fibres and some additives of paper	Krkoška, P.
Kuřátková, M.	Oxidative processes on biotic damaged LCM	Vrška, M.
Lehotský, V.	Structural analysis of paper	Šutý, Š.
Štefancová, L.	Modification on lignocellulosics and processing of the results into knowledge database	Katuščák, S.
Štechová, K.	The improvement of compactness and stability of historical books and documents	Vizárová, K.
Valaseková, A.	The influence of paper properties on printing quality for different print technology	Šutý, Š.

VIII. PUBLICATIONS

CC publications

- [1] Jablonský, M., Vrška, M., Katuščák, S.: Cellulose protectors for improving ozone bleaching – review. Wood Research 49(4), 71-85 (2004).
- [2] Vrška, M., Katuščák, S., Polovka, M., Vizárová, K., Cedzová, M., Hanus, J., Mináriková, J., Bukovský, V.: Lignocellulosics Stabilization Efficacy Measurement and Evaluation. Wood Research 49(4), 53-62 (2004).

Publications registered in CA, FSTA and other ISI databases

- [1] Cedzová, M.*, Tiňo, R., Reháková, M., Vizárová, K., Šutý, Š.: Influence of light on the change of properties of copy paper and of sulphate kraft pulp during accelerated ageing. Papír a celulóza 59(10), 297-298 (2004)

Lectures and posters

- [1] Cedzová, M.*, Tiňo, R., Reháková, M., Vizárová, K., Šutý, Š.: Influence of light on the change of properties of copy paper and of sulphate kraft pulp during accelerated ageing. In: International conference Pulp and Paper, Brno (Czech Republic), June 16-18, 2004

- [2] Jablonský, M.*, Vrška, M.: Ozone bleaching of kraft pulp in the presence of peracetic acid as cellulose protector. In: International conference Pulp and Paper, Brno (Czech Republic), June 16-18, 2004

Text books

- [1] Reháková, M., Vizárová, K.*, Jančiová, D., Valovičová, M., Varga, Š.: Preselection of historical books in the process of their stabilization. In: Proc. Int. Conf. Durability of paper and writing. Ljubljana (Slovenia), Nov. 16-19, 2004. Ed.: Kollar, J., Strlic, M., Havermans, J.B.G.A., pp. 68-69 (2004). ISBN 961-6162-98-5. (Po)
- [2] Hanus, J., Katusčák, S.*, Katusčák, D., Bukovský, V., Rychlý, J.: Integrated effort for paper cultural heritage preservation in the Slovak Republic. In: Proc. Int. Conf. Durability of paper and writing. Ljubljana (Slovenia), Nov. 16-19, 2004. Ed.: Kollar, J., Strlic, M., Havermans, J.B.G.A., pp. 86-87 (2004). ISBN 961-6162-98-5. (Pr)
- [3] Hanus, J., Rychlý, J., Mináriková, J., Matisová-Rychlá, L., Katusčák, S.*, Vrška, M., Bukovský, V.: Estimation of the progress of oxidative degradation of paper using chemiluminometry and standard doublefold test. In: Proc. Int. Conf. Durability of paper and writing. Ljubljana (Slovenia), Nov. 16-19, 2004. Ed.: Kollar, J., Strlic, M., Havermans, J.B.G.A., pp. 22-23 (2004). ISBN 961-6162-98-5. (Pr)
- [4] Bamburová, A., Šurina, I.: Biofuels:Using of Wood Materials as a Source of Energy In: Wood, Pulp and Papers, Modifications and properties of bio-based lignocellulosic materials. Čiilistov, 10. Dec. 2004, pp.29-30, ISBN 80-227-2173-5.
- [5] Bielíková, L., Melnik, M., Segla, P., Katuscak, S., Polovka, M., Cedzová, M., Gallová, I., Bukovský, V. Multifunctional modifying substances and methods on the books at the base of alkoxyderivates of used metals and polymers in the non-polar systems. Non-aqueous modifying systems on the books In: Wood, Pulp and Papers, Modifications and properties of bio-based lignocellulosic materials. Čiilistov, 10. Dec. 2004, pp.11-12, ISBN 80-227-2173-5
- [6] Cedzová, M., Katusčák, S., Vizárová, K., Deacidification and stabilization of lignocellulosics carriers of information In: Wood, Pulp and Papers, Modifications and properties of bio-based lignocellulosic materials. Čiilistov, 10. Dec. 2004, pp.46, ISBN 80-227-2173-5
- [7] Čaracký, L., Vizárová K., Bukovský J., Feketeová J., Katusčák S. Mass Deacidification and Technology of Preservation For Save Book In: Wood, Pulp and Papers, Modifications and properties of bio-based lignocellulosic materials. Čiilistov, 10. Dec. 2004, pp.13, ISBN 80-227-2173-5
- [8] Čuláková, L., Hanus, J., Mináriková, J., Katusčák, S., Vizárová, K., Cedzová, M., Čaracký, L., Repová, M. Multifunkčné vodné sústavy na modifikáciu archívnych dokumentov In: Wood, Pulp and Papers, Modifications and properties of bio-based lignocellulosic materials. Čiilistov, 10. Dec. 2004, pp.14-15, ISBN 80-227-2173-5
- [9] Feketeová, J., Vizárová, K., Bukovský, V., Čaracký, L., Katusčák, S. Mass Deacidification and Technology of Preservation For Save Book In: Wood, Pulp and Papers, Modifications and properties of bio-based lignocellulosic materials. Čiilistov, 10. Dec. 2004, pp.31, ISBN 80-227-2173-5
- [10] Figeďová, S., Smolár, M., Súlovec, D. Increasing of Ecological Quality of In: Wood, Pulp and Papers, Modifications and properties of bio-based lignocellulosic materials. Čiilistov, 10. Dec. 2004, pp.27, ISBN 80-227-2173-5
- [11] Frisová, M., Šurina, I. Study of Paper and of Paper Documents Chemical and Mechanical Properties in Relationship with their Aging In: Wood, Pulp and Papers, Modifications and properties of bio-based lignocellulosic materials. Čiilistov, 10. Dec. 2004, pp.32-33, ISBN 80-227-2173-5
- [12] Gallová, I., Cedzová, M., Mináriková, J., Vizárová, K. Mixtures of alkoxyderivates. Finding of synergism In: Wood, Pulp and Papers, Modifications and properties of bio-based lignocellulosic materials. Čiilistov, 10. Dec. 2004, pp.23, ISBN 80-227-2173-5
- [13] Geguššová, A., Holeš, M., Kozáková, L., Mikulášik, R., Vrška, M., Tiňo, R. The study of nanoparticles from biomaterials using in furniture industry In: Wood, Pulp and Papers, Modifications and properties of bio-based lignocellulosic materials. Čiilistov, 10. Dec. 2004, pp.34, ISBN 80-227-2173-5
- [14] Gemzická, E., Šutý, Š., Katusčák, S., Tiňo, R., Vizárová, K. The nonprocess elements (NPE) in pulp mill – a close cycle pulp mill In: Wood, Pulp and Papers, Modifications and properties of bio-based lignocellulosic materials. Čiilistov, 10. Dec. 2004, pp.45, ISBN 80-227-2173-5
- [15] Gigac, J., Šutý, Š.*, Valáseková, A., Strežo, P.: Evaluation of paper surface properties and application of image analysis for offset and ink-jet printing. In: Zborník zo seminára so zahraničnou účasťou „Polygrafia Academica 2004“, Bratislava (Slovakia), 9 – 10 Nov. 2004., pp. 20-30 (2004). ISBN 80-227-2100-X. (Pr) ,
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Contracts

- [1] Šutý, Š. Vzdelávací kurz Od dreva k papieru ZoD Neusiedler SCP a.s.
- [2] Šutý, Š. Educational course "Advanced training Program" ZoD Neusiedler SCP a.s
- [3] Vrška, M. Educational course for the employers, Neusiedler SCP a.s ZOD č. 64/2003

Grants

- [1] Čeppan, M., Reháhová, M., Katuščák, S., Vizárová, K.: The deterioration of historical manuscripts and documents related to transitional elements in writing inks. Grant. APVT-20-034202 (kód FCHPT 710)
- [2] Katuščák, S. Methodology of determination of VOC and TVOC from products based on wood Grant. Project of ME SR No 2003 26SP 484 0303 2002 (kód FCHPT 538)
- [3] Katuščák, S. Preservation, Stabilization and Conservation of Traditional Information Supports in the Slovak Republic Grant. Project of ME SR No 2003 č. 661/2003 (kód FCHPT 533)
- [4] Katuščák, S., Vrška, M. Study of the oxidation in chemical processing of wood through new methods of separation and analysis Grant. VEGA Project No 1/0061/03 (kód FCHPT 997)
- [5] Šurina, I. Methodology of preparation of new cyclodextrin derivatives with ion-exchanging groups Grant. VEGA Project No 2/3161/23 (kód FCHPT 810)
- [6] Šutý, Š. Coated ink jet papers Grant. APVT Project No 99-007302 (kód FCHPT 708)
- [7] Šutý, Š. Production of new pulp and paper products from wood of lower quality - Effect of fibrous web structure and fibre properties on transfer and qualitative parameters of paper Grant. Project of ME SR No 2003 SP 260280C03 (kód FCHPT 534)

DEPARTMENT OF ENVIRONMENTAL ENGINEERING

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Research Fellows:

Igor Bodík, PhD; Mária Földesová; Miroslav Hutňan, PhD

PhD Students:

Eva Gašpariková (till 01.10.2004); Lucia Mitaľová; Lucia Dančová (since 1.10.2004); Andrej Kalina (since 1.10.2004); Andrea Bujnová; Katarína Svetková; Soňa Priesolová; Peter Chnapko; Angelika Kassai; Ladislav Maro; Marek Rybár; Jana Vanečková-Plchová; Monika Karacsoniová; Ľubomír Gajdoš; Juraj Farkas (since 1.10.2003); Silvia Weigelťová (since 1.10.2004)

Technical staff:

Eleonóra Hornáčková; Marta Onderová;

II. TEACHING AND RESEARCH LABORATORIES

A. Teaching laboratories:

Laboratory of Water Chemistry
Laboratory of Nuclear Analytical Chemistry
Laboratory of Water Technology

B. Research laboratories:

Laboratory of Air Protection Technology
Laboratory of Microbiology and Ecotoxicology
Laboratory of Organic Chemistry
Laboratory of Radioecology
Laboratory of Water and Wastewater Engineering
Laboratory of Computer Modelling

III. TEACHING

A. Undergraduate Study:

1. semester (Bc)			
1. semester (Bc)			
1. semester (Bc)	Nuclear Chemistry and Technology	1/1/0	Koprda
1. semester (Bc)	Environmental Technology	2/0/0	Piatrik, Čík, Koprda
1. semester (Bc)	Biology of Water, Air and Soil	2/0/0	Frank
	Atmospheric and Water Chemistry	2/2/0	Prousek, Bodík
	Hydrology, Meteorology and Pedology	2/0/0	Frank
	Nuclear Chemistry and Technology	2/0/0	Koprda
	Laboratory Practice I.	0/0/8	Bodík, Földesová, Harangozó,
1. semester (Bc)	Air Protection Technology	2/0/0	Čík
	Radioecology	2/0/0	Harangozó,
	Wastewater Engineering	2/2/0	Derco, Drtil
	Laboratory Practice II.	0/0/8	Derco, Földesová, Čík
1. semester (Bc)	Risk Properties of Substances	2/0/0	Prousek,
	Elimination and Utilization of Wastes	2/0/0	Piatrik, Koprda

	Environmental Technological Project	2/1/0	Drtil, Derco
	Environmental Impact Assessment	2/0/0	Piatrik, Koprda
	Laboratory Practice III.	0/0/10	Drtil, Harangozó, Čík
	Control of Environmental Pollution	2/0/0	Harangozó
	Special Ecology and Ecotoxicology	2/0/0	Prousek
	Processes and Technology of Water Treatment	2/1/0	Hutňan, Bodík
	Air Protection Technology and Air Treatment	2/1/0	Čík
1. semester (Bc)	Diploma Work	0/0/30	all members of the staff

IV. CURRENT RESEARCH PROJECTS

VEGA Project No. 2/2049/22 Effects of Antioxidants and Substances Affecting Immunity System (Katarína Bauerová, IEF SAS Bratislava); Department part: Penetration of Xenobiotics across Skin (Vasil Koprda, Margita Harangozó, Zoltán Kassai, Andrea Bujnová, Eva Kunhartová, Monika Stasová, Daniela Sabolová, Katarína Ducková (FaF UK), Gabriela Ficzerová (FaF UK), Anna Gvozdjaková a Jarmila Kucharská (LF UK))

During this year an evaluation of speed of transdermal penetration of ionic and non-ionic species was studied and effects of physico-chemical factors on this process were assessed. Using radioactive labeled substances, the barrier function of skin was evaluated. Excellent models of naked and haired skin of newborn rat, as well as the full, splitted and stripped skin enabled us to study the penetration speed of pharmacologic active and auxiliary substances across the skin barriers. The snake shed imitted stratum corneum for topical and buccal administration and served for standardization of transdermal membranes. Transdermal penetration of new drugs, cosmetics and oxygen scavengers were studied. Study of kinetics of coenzyme Q10 (CoQ10, ubiquinone), one of the most intensively studied substances today, was realized. Its important antioxidative effect can prevent heart diseases, strenghten immunity and increase cell energy. The ratio of transepidermaly and transfolicularly penetrated amounts of CoQ10 was assessed, as well as the possible effects of penetration enhancers. Also bioability of excellent antimycotics Terbinafine was studied and its transdermal penetration was determined after its liberation from different vehicles.

Project duration: from 1.1.2000 to 31.12.2004

Part of the VEGA project No. 1/1379/04 Syntheses directed towards novel heterocyclic compounds with optoelectronic properties, specific biological activity and apoptosis (Gabriel Čík)

The effect of structural changes in regiorandom poly(3-dodecylthiophene) (PDDT) on interactions of polaron was studied. It was found that changes in side-chains and in the entire polymeric system, expressed by the glass transition temperature, affected the system's magnetic properties. Structural changes observed in the range of $T = 100-300$ K are dominated by processes dissipating magnetic energy. At low temperatures energy dissipating processes were not observed, rather magnetic properties were determined by transitions of polarons to bipolarons.

The relations between the fluorescence and structural properties of PDDT were studied by steady-state and time-resolved techniques. The comparison of the time resolved results of two pure PDDT samples with different ratio of region-regularity revealed that the irregularities cause conformational defects in the polymer backbone. On the basis of performed measurements and data processing methods, the ratios of the electron-donated thiophene units that are built into the PDDT chain were estimated in the case of copolymer samples. The fluorescence technique proves to be an available tool, alongside NMR spectroscopy, for yielding structural information about polymer materials.

A new type of alternating regular copolymer of thiophene oligomer with polyethylene oxide was synthesized. The product was characterized by NMR, UV-VIS and fluorescence spectra, X-ray diffraction and DSC measurements.

Project duration: from 01.01.2004 to 31.12.2006

Project in cooperation with the Ministry of Environment of the Slovak Republic, Remediation technologies of PCB (No. 148/2003/6.2) and Technologies for lowering of PCB concentration (No. 161/2003/6.2) (Gabriel Čík)

Study of remediation technologies of PCB

Project duration: from 01.12.2003 to 15.06.2005

Institutional Project No. 155/03 The separation and Isolation of metals and radionuclides from environmental components with the aid of natural and chemically treated sorbents (Vasil Koprda, Mária Földesová, Margita Harangozó)

The activity of Ra - 226 in ground water and in soft mineral water was determined. The determination was realised after precipitation Ba(Ra)SO₄ with two techniques: with scintillation counter tube NA 6201 II and liquid scintillation spectrometry with the aid of TRI-CARB 2900TR. Optimal condition for the determination are: -scintillation cocktail UltimaGold, - ratio scintillation cocktail:water 10ml: 10ml, - efficiency of measurement is 32 %. The highest values of Ra - 226 in mineral and table waters were in natural mineral water Čerinska and curative mineral water Vincentka. The lowest value of Ra - 226 was in the mineral water Mitická and Korytnica. The determination of sorption coefficient, distribution coefficient, sorption capacity and per cent of sorption of natural and chemically modified zeolites towards Pm and U were studied by static radioexchange method. The radioactivity was measured by liquid scintillation counting method (LSC). It was studied the possibility to compensate special silica gel which is used as a sorbent in the standard spectrophotometric detection of concentration of uranium with some kind of zeolites. The influence of pH, temperature and synergic effect of temperature and chemical treatment on the structure of selected zeolites were studied by IR spectroscopy and DTA and TG methods. The leachability of loaded zeolites in different solutions was studied as well.

Project duration: from 01.01.2003 to 31.12.2005

VEGA Project No. 1/1382/04 Advanced methods for water, wastewater, sludge and organic wastes treatment (Ján Derco)

The aim of the project is the research and evaluation of progressive methods of water treatment, wastewater treatment, sludge treatment and disposal, organic wastes treatment and water quality control. Research has been focused on selected physical-chemical and biological processes. The availability of ozonation for the removal and an enhancement of biodegradability of hardly biodegradable or resistant compounds contained in selected industrial wastewaters were investigated. Experimental investigations of the possibilities of utilisation of anaerobic-aerobic treatment processes for treatment of municipal wastewaters under low temperature conditions were finalised.

Project duration: from 01.01.2004 to 31.12.2006

Bilateral Slovak – Czech Cooperation Project No. 103: Utilisation of membrane and oxidation processes for water and wastewater treatment (Ján Derco)

Kinetics of controlled ozonation of synthetic wastewater containing biologically recalcitrant 2-mercaptobenzothiazole was studied. Methodology of evaluation of biodegradability of ozonation intermediates and products based on respirometric measurements was elaborated. The cooperation of both involved research teams in the field of utilisation of ozone for surplus biological sludge production was settled..

Project duration: from 01.01.2004 to 31.12.2005

Bilateral Slovak – Czech Cooperation Project No.: 042: Biological wastewater, sludge and organic material treatment (Miloslav Drtil)

The aim of the project is the research and exchange of information on progressive methods of water treatment, wastewater treatment, sludge treatment and disposal, organic wastes treatment and water quality control. Specific attention is given to nutrients removal from wastewater, anaerobic biogas production from organic materials, comparison of mesophylic and termophylic anaerobic processes.

Project duration: from 01.01.2004 to 31.12.2005

V. CURRENT EDUCATION PROJECTS

A. Project. No 2032040 Norwergian Competencies Transfer into New Curricula of Environmental Engineering Education at the Slovak University of Technology in Bratislava, Slovak-Norwergian bilateral cooperation. (Gabriel Čik)

The main objective of the project is to take advantage of Norwergian long time experience in the field of Environmental Engineering curricula. Effort will be focused on utilization of this through partnership assistance in the process of introduction of the above subject into curricula of the 3-degree university education (bachelor, engineer and PhD) at the Faculty of Chemical and Food Technology of the Slovak University of Technology in Bratislava.

Project duration: from 01.07.2003 to 30.06.2006

B. OSF Projekt G/236/02/61300 Water Technology and Water Resources Protection (Ján Derco)

Internet Distance Education Program on Water Technology and Water Resources Protection as a part of continuing education for professionals in the field was prepared. The first run of the online version of the course was finalised.

Project duration: from 02.07.2002 to 30.06.2004

VI. COOPERATION

A. Cooperation in Slovakia

Institution	Type of cooperation	Responsible person	Duration
Slovak Office of Standards, Metrol. and Test., Cyclotron Center of the SR, Bratislava	Applied radiation chemistry, production of positron radiopharmaceuticals	Ružička J., vicedirector; Kassai Z., Dept. of positron emitters, Štefanovičova 3, 810 05 Bratislava	01.02.2000 -
Slovak Academy of Science, Bratislava	Possibility of zeollite use in wastewater	Sládek, P., director, Dúbravská cesta 9, Bratislava	01.11.2003 - 31.12.2003
ASIO-SK s.r.o.	Anaerobic-aerobic wastewater treatment	Kratochvíl, K., director, Malobyčianska ul., Bytča	01.01.1997 -
FELLEGI Int.	Anaerobic treatment processes	Fellegi, J., director, Na Hrebienku 38, Bratislava	01.03.2003 -
Slovak distilleries and liquories, Leopoldov	Evaluation of ethanol and acetic acid properties from point of view of possible effect to quality of ground and underground water	Miklovič, S., Slovenské liehovary a likéry a.s., Trnavská cesta, 920 41 Leopoldov	02.04.2004 - 16.04.2004
North-Slovak waterworks, Žilina	Possibility of odour elimination from sewerage in Sučany town	Kundrík, M., director, SVS a.s., Bôrická cesta 107, 010 10 Žilina	01.07.2004 - 31.7.2004
Ecological servis, ltd. Strážske	Study of WWTP operation from point of view of emission reduction	Kovaľ, E., director, Ekologické služby s.r.o., Priemyselná 720, 072 22 Strážske	17.09.2004 - 31.10.2004
ENZO-VEORNIKA-VES, Dežerice	Tests of anaerobic biodegradability of selected wastewater	Valach, J., 957 03 Dežerice 342	22.09.2004 - 31.10.2004
Institute of Experimental Phytopathology and Entomology of the SAC	Radioecology	J. Kráľovič, Ľ. Weismann, Slovak Academy of Science, Ivánka pri Dunaji	01.01.2002 -
Dep. of Chemistry, Matej Bel Univ., Banská Bystrica	Education studies in Environmental chemistry	Tólgýessy, J., Ružička, J., Čejpek, K., Matej Bel University, 974 01 Banská Bystrica	01.01.2001 -
Department of Analytical Chemistry, Faculty of Pharmacy, Comenius University	Environmental analytical chemistry	Havránek, Mlynská dolina, 824 15 Bratislava	01.01.2003 -
Podtatranská vodárenská spoločnosť a.s., Poprad	Evaluation of wastewater treatment plant Spišská Nová Ves and proposal of reconstruction	Svrbický Vladimír, director, Hraničná 662/17, 058 01 Poprad	01.10.2004 - 31.12.2004
Ministry of Environment SR, Department of Waste Treatment	Preparation of Waste Register Wastes, Preparation of Judgements about Wastes	Ing. P. Gallovič, Head of Department. Ing. M. Lacuška, CSc.	03.01.2004 - 20.12.2004
Ministry of Environment SR, Department of Environmental Impact Assessment – EIA	Preparation of Register of Wastes, Preparation of Judgements about Wastes	Ing. V. Húsková, Head of Department	05.01.2004 - 20.12.2004
Department of Ekology Faculty of Natural Sciences University of Mathias Bel. B. Bystrica	Education studies in environmental Sciences	PaedrDr. S. Vincíková, PhD., Head of Department	03.01.2004 - 20.12.2004

Institution	Type of cooperation	Responsible person	Duration
Doprastav, a.s. Bratislava	Introducing and Certification of Environmental Management Systems – EMS	Ing. Klačanský, Head of Department – EMS	30.01.2004 – 20.12. 2004
TAVAL, s.r.o. Prešov	Introducing and Certification of Environmental Management Systems – EMS	Ing. D. Džuganová, director of company	03.02.2004 – 20.12. 2004
FIVING, s.r.o. Liptovský Mikuláš	Introducing and Certification of Environmental Management Systems – EMS	Ing. D. Serdel, technical director of company	10.04.2004 – 20.12. 2004
VODEKO, a.s. Trenčín	Introducing and Certification of Environmental Management Systems - EMS	Ing. M. Michalák, director of company	03.01.2004 – 20.12. 2004
AMYLUM Slovakia, s.r.o. Boleráz	Preparation of Documents EIA	Ing. G. Szarka, projekt manager of company	03.01.2004 – 20.12. 2004
VODOPROJEKT Bratislava	Preparation of Documents EIA	Ing. D. Franzenová, projekt manager	03.01.2004 – 20.12. 2004
CHEMZA a.s.	Applied Research Project	Ing. Michal Bočko, Chemza a.s., Priemysel'ná 720, 072 22 Strážske	1. 07. 2004 – 30. 09. 2004
MATADOR a.s Púchov	Applied Research Project	Ing. Michal Štubňa, Matador a.s., T. Vansoverj 1054/45 Púchov	1. 03. 2004 – 30. 05. 2004
OSF Foundation	IDEP Program - Grant G/236/02/61300	Katarína Pišúťová-Gerber, Nadácia otvorenej spoločnosti - OSF, Baštová 5, 811 03 Bratislava	02.07.2002 - 30.06.2004
REMAS Servis s.r.o.	Applied Research Project	Ing. Milan Gál, REMAS Servis s.r.o., Sekurisova 16, 841 02 Bratislava	11.10. 2004 - 21.12.2004
Slovenská paroplynová spoločnosť a.s.	Applied Research Project	Ing. Ivan Krajčír, SPS a.s., Bystrická cesta 13, 034 17 Ružomberok	25. 06. 2004 – 20. 08. 2004
Slovak Office of Standards, Metrol. and Test., Cyclotron Center of the SR, Bratislava	Applied radiation chemistry, production of positron radiopharmaceuticals and seed irradiation with gamma rays	Ružička J., vicedirector; Kassai Z. , Dept.of positron emitters, Štefanovičova 3, 810 05 Bratislava	01.02.2000 -
Slovak Academy of Science, Bratislava	Possibility of zeollite use in wastewater	Sládek,P., director, Dúbravská cesta 9, Bratislava	01.11.2003 - 31.12.2003
IPRES Engineering, s.r.o.	Possibility of zeollite use in wastewater treatment	Šurka,F., president, Dúbravská cesta 9, Bratislava	01.05.2003 - 31.12.2003
Dep. of Nuclear Chemistry, Faculty of Natural Sci., Com. Univ., Bratislava	Education, Lecturing, Dep. of Nuclear Chemistry, Faculty of Natural Sci., Com. Univ., Bratislava	Mátel Ľubomír, head of depart., Mlynská dolina, 824 15 Bratislava	01.01.1992 -
Dep. of Chemistry, Matej Bel Univ., Banská Bystrica	Education studies in Environmental chemistry	Tomeček Otto, research worker,974 01 Banská Bystrica	01.01.2001 -
Water Research Institute,Bratislava	LSC measurements of radionuclides	Vršková Marta, head of dep., Nabr. L. Svobodu 5, 812 49 Bratislava	01.01.1996 -
Chemical Institute of Faculty of Natural Sciences of Comenius University, Bratislava	Analysis of dust particles	Krištín J., head of Dept. of Physical Methods, Mlynská dolina , 842 15 Bratislava	01.05.2002 -
Comenius University, Faculty of Pharmacy, Dpt. of Galenic Pharmacy, Bratislava	Penetration of Terbinafine across the skin	Duckova K., vicedean, ul.Odbojárov 10, 832 32 Bratislava	01.04.2002 -
Matej Bell University, Faculty of Natural Sciences, Dpt. of Environmental Chemistry	Cold electron radiation sterilisation	Tolgyessy J., Prof.emeritus, Tajovského 40, 97401 Banská Bystrica	01.06.2001 -

Institution	Type of cooperation	Responsible person	Duration
Institute of Experimental Pharmacology of Slovak Academy of Sciences, Bratislava	Transdermal penetration, animal skin models	Bauerová K., department head, Dúbravská cesta 9, 842 16 Bratislava	01.02.1998 -31.12.2004
Research Institute of Nuclear Power Stations, Trnava, Ltd., Dept. of RWPT	Nuclear wastes likvidation	Chnapko P., doctoral study, Okružná 5, 918 64 Trnava	01.08.2002 -
Nuclear Regulatory Authority of the Slovak Republic	Nuclear and radiation safety - Advisory Committee of the director	Žiakova M., director, Bajkalská 27, 820 07 Bratislava	01.05.1999 -
Pharmacobiochemical Lab., School of Medicine, Comenius Univ., Bratislava	Transdermal transportation of coenzyme Q10	Gvozdjakova M., department head, Kucharska J., Hlboká 2, 811 04 Bratislava	01.05.2003 -

B. International Cooperation

Institution	Type of cooperation	Responsible person	Duration
ASIO, s.r.o., Brno, Czech Republic	Anaerobic and aerobic wastewater treatment, domestic wastewater	Plotěný, K., director, ASIO s.r.o, Tuřanka, Brno, Czech Republic	01.01.1997 -
GRANIT Technologies S.A. Lausanne, Swiss	Anaerobic and aerobic wastewater treatment, sludge stabilisation	Doppenberg, F., technical director, Lausanne, Swiss	01.12.2004 -
Institute of Chemical Technology, Prague, Czech Republic	Water and wastewater treatment, sludge treatment, nutrients removal, biogas production	Jeníček, P., department head, VŠCHT, Technická 6, Prague, Czech Republic	01.01.2004 - 31.12.2005
ISMAL-CNR Milano	FP6-2002-NMP-1, Proposal: No STPR 001495 OSSO	Alberto Bolognesi, ISMAC-CNR Milano, Italy	01.06.2003 -
Faculty of Chemistry, Brno, Czech Republic	Lectures on Wastewater Engineering	Prof. Ing. Jaroslav Fiala, CSc., Faculty of Chemistry TU Brno, Purkyňova 118, 612 Brno, Czech Republic	16. 02.2004- 30.06.2004
Faculty of Chemistry, Brno, Czech Republic	Project No. 103	Assoc. Prof. Petr Dolejš, CSc., Faculty of Chemistry TU Brno, Purkyňova 118, 612 Brno, Czech Republic	1. 01.2004- 31.12.2004
ART.BIO.FERM. s.r.o., Moravské Bránice, Czech Republic	Anaerobic treatment of wheat stillage	Krčmař, S., director, Moravské Bránice 59, 664 64 Dolní Kounice	15.05.2004 - 15.6.2004
Department of Chemistry, Yangon University, Yangon, Myanmar	Radiometric Flow Injection Analysis	Mynt U, head of department, Yangon University, Yangon, Myanmar	01.01.1990 -
Medway Sciences Univ. of Greenwich	Transdermal penetration of pharmacologically active substances across skin	Hadgraft J.-head of Skin research, Central Ave., Chatham Maritime, Kent ME4 4TB, UK	01.02.1995 -

C. Membership in Domestic Organizations and Societies

Name	Organisation or Society	Position	Valid date
Bodík Igor	Association of Wastewater Treatment Experts of the Slovak Republic	member of advisory board	13.05.1999 -
Čík Gabriel	Slovak Chemical Society	member	01.01.1991
Drtíl Miloslav	Association of Wastewater Treatment Experts of the Slovak Republic	president	13.05.1999 -
Derco Ján	Association of Wastewater Treatment Experts of the Slovak Republic	member of advisory board	13.05.1999 -
Derco Ján	Slovak Society of Chemical Engineering	member	29.09.1995 -
Derco Ján	Slovak Chemical Society	member	01.05.1997 -
Derco Ján	Common Field Committee -28-95-9 Chemistry and Technology of Environment	member	18.12.1997 -
Derco Ján	Common Field Committee - 36-05-9 Sanitary-technical buildings	member	02.12.2003 -

Name	Organisation or Society	Position	Valid date
Gašpariková Eva	Association of Wastewater Treatment Experts of the Slovak Republic	member	13.05.1999 -
Harangozó Margita	Slovak Chemical Society, Bratislava	member	15.2.1986
Harangozó Margita	Slovak Pharmaceutical Society, Bratislava	member	28.10.1994
Hutňan Miroslav	Slovak Society of Chemical Engineering	member of advisory board	30.04.1995 -
Hutňan Miroslav	Association of Wastewater Treatment Experts of the Slovak Republic	member	13.05.1999 -
Koprda Vasil	Slovak Nuclear Society (SNUS Acad. Board)	president	01.01.2000 -
Koprda Vasil	Slovak Chemical Society, Bratislava	member	01.01.1965 -
Koprda Vasil	Slovak Medical Society, Pharm.Soc	member	01.01.1977 -
Prousek Josef	Slovak Chemical Society	member	01.01.1979 -
Piatrik Milan	Faculty of Natural Sciences University of Mathias Bel in Banská Bystrica	Science Council member	03.01.2004 -

D. Membership in International Organisations and Societies

Name	Organisation or Society	Position	Valid date
Bodík Igor	International Water Association	member	01.01.1990 -
Bodík Igor	Journal Vodní hospodářství - Water management	other	01.01.2004 -
Derco Ján	International Water Association	member	01.01.1994 -
Derco Ján	Association of Wastewater Treatment Experts in Czech Republic	member	01.05.1997 -
Derco Ján	Journal of Polish Environmental Study	other	01.04.1995 -
Derco Ján	Council of European Water Association	member	15.07.2002 -
Derco Ján	Common Field Committee - Chemistry and Technology of Environment Protection - Faculty of Chemistry TU, Brno	member	01.02.2003 -
Čík Gabriel	European Photochemical Association, Mulheim, Germany	member	01.01.1992
Drtil Miloslav	Association of Wastewater Treatment Experts of the Czech republic	member of advisory board	01.01.1994 -
Prousek Josef	Czech Chemical Society	member	01.05.1979 -
Prousek Josef	European Photochemical Association	member	01.01.1986 -
Piatrik Milan	Czech Science Foundation – GACR, Prague	member	03.01.2004 -
Koprda Vasil	FECS Division for Chemistry and Environment -delegate for Slovakia	member of advisory board	01.04.2002 -
Hutňan Miroslav	Association of Wastewater Treatment Experts in Czech Republic	member	01.05.1997 -

E. Visitors from abroad

Name	Organisation or Institution	State	Date / Duration
Bratebo H.	NTNU Trondheim	Norway	December 2004 (4 days)
Hertwich E.	NTNU Trondheim	Norway	December 2004 (4 days)
Lamvik T.	NTNU Trondheim	Norway	December 2004 (4 days)
Wanner, J.	Institute of Chemical Technology, Prague	Czech Republic	October 2004 (3 days)
Dohányos, M.	Institute of Chemical Technology, Prague	Czech Republic	October 2004 (3 days)
Jeníček, P.	Institute of Chemical Technology, Prague	Czech Republic	October 2004 (3 days)
Zábranská, J.	Institute of Chemical Technology, Prague	Czech Republic	October 2004 (3 days)
Bílková M.	Faculty of Chemistry, TU Brno	Czech Republic	July 2004 (1 day)
Borovičková M.	Faculty of Chemistry, TU Brno	Czech Republic	July 2004 (1 day)
Mega J.	Faculty of Chemistry, TU Brno	Czech Republic	July 2004 (1 day)

F. Visits of Staff Members and Postgraduate Students in Foreign Institutions

Name	Organisation / Institution / Conference	State	Date / Duration
Bodík,I.	SMEs Results of research, products for the recycling industry – CEN Chemnitz	Germany	May 2004 (3 days)
Bodík,I.	VEDUNIA – Das Abwassersystem der Zukunft fuer Wien – International congress, OWAV Wien	Austria	October 2004 (2 days)
Bodík,I.	International Exhibition Pollutec 2004, Vienna	Austria	November 2003 (1 day)
Bodík,I.	Granit Technologies SA, Lausanne	Swiss	December 2004 (3 days)
Drtíl,M.	VEDUNIA – Das Abwassersystem der Zukunft fuer Wien – International congress, OWAV Wien	Austria	October 2004 (2 days)
Derco,J.	VEDUNIA – Das Abwassersystem der Zukunft fuer Wien – International congress, OWAV Wien	Austria	October 2004 (2 days)
Derco,J.	EWA's Annual Meeting, Oslo	Norway	June 2004 (4 days)
Derco,J.	16th International Congress of Chemical and Process Engineering, Prague, Czech Society of Chemical Engineering	Czech Republic	August 2004 (4 days)
Derco,J.	Industrial Wastewaters, Kyjov, Association of wastewater treatment experts of the Czech Republic	Czech Republic	MSeptember 2004 (3 days)
Drtíl,M.	International Seminar New methods of WWTP operation, Moravska Trebova, VHOS and Association of wastewater treatment experts of the Czech Republic	Czech Republic	April 2004 (2 days)
Hutňan,M.	Institute of Chemical Technology, Prague	Czech Republic	June 2004 (4 days)
Kalina,A.	International Exhibition Pollutec 2004, Vienna	Austria	November 2003 (1 day)
Koprda, V.	9. Int.Conf. Perspectives of Percutaneous Penetration, La Grande Motte	France	April 13-17, 2004
Koprda,V.	NATO ARW Workshop on Radiation Inactivation of Bioterrorism Agents, Budapest	Hungary	March 7-9, 2004

VII. THESES AND DISSERTATIONS

A. Graduate Theses (Bc Degree) for state examinations after three years of study

Name	Title of Thesis	Supervisor
Almásiová,B.	Influence of selected degreasers on biodegradability of oil substances	Derco,J.
Blštiaková,A.	Use of respirometry for determination of selected paramaters of wastewater treatment	Drtíl, M.
Behrová, J.	Utilization of Zero-valent Iron for Degradation of Chlorinated Pollutants	Prousek,J.
Dušová,R.	Use of electrocoagulation in wastewater treatment	Hutňan,M.
Gergelyová,P.	Chemically Modified Zeolites – Material of Future?	Földesová,M.
Leitner,P.	Anaerobic Treatment of Agricultural Products	Hutňan,M.
Pačáčová,P.	Comet assay	Čerňáková,M.
Sabolová, D.	Penetration of biologicaly active substance through skin models	Koprda, V.
Stasová, M.	Permeation of ions across the skin substitutes	Koprda, V.
Šefčík P.	Physicochemical methods for destruction of polychlorinated biphenyls	Čík, G.

B. Graduate Theses (MS Degree) for state examinations after five years of study

Name	Title of Thesis	Supervisor
Alevová, A.	Utilisation of zero-valent iron for the degradation of chlorinated pollutants of water	Prousek, J.
Dančová,L.	Influence of disinfectatns on the wastewater treatment plant performance	Bodík,I.
Fábryová, D.	Evaluation and proposal of reconstruction of WWTP Poltar - feasibility study	Drtíl, M.
Fedorová, Z.	The study of uranium sorption by chemically modified zeolites	Földesová,M.
Halkovičová,K.	Controlled ozonation of biologically resistant compounds	Derco,J.

Name	Title of Thesis	Supervisor
Kovalčíková, M.	Influence of selected degreasing agent on biodegradability of oil compounds	Derco, J.
Kalina, A.	Wastewater treatment by electrocoagulation	Hutňan, M.
Kubišová, E.	Utilisation of zero-valent iron for the reductive degradation of chlorinated pollutant of water	Prousek, J.
Kunhartová, E.	Penetration of chemicals across animal models of skin	Koprda, V.
Olšavová, L.	Determination of Ra-226 in mineral waters with liquid scintillation spectrometry	Harangozó, M.
Píšová, P.	The study of Methods Quality Drinking water secure during its Treatment and Distribution	Piatrik, M.
Vasilková, I.	The study of uranium sorption by natural sorbents	Földesová, M.

VIII. PUBLICATIONS

Books, Chapters in monographs

- [1] Tölgýessy, J., Harangozó, M.: Radiochemical Methods/Food and Environmental Applications , No. 00526 Encyclopedia of Analytical Sciences, 2nd Ed., Elsevier, London, (2004).
- [2] Tölgýessy, J., Harangozó, M.: Radiochemical Methods/Natural and Artificial Radioactivity , No. 00517 Encyclopedia of Analytical Sciences, 2nd Ed., Elsevier, London, (2004).
- [3] Tölgýessy, J., Harangozó, M.: Radiochemical Methods/Radionuclide Monitoring , No. 00518, Encyclopedia of Analytical Sciences, 2nd Ed., Elsevier, London, (2004).
- [4] Tölgýessy, J., Harangozó, M.: Radiochemical Methods/Radio-reagent Methods, No. 00523 Encyclopedia of Analytical Sciences, 2nd Ed., Elsevier, London, (2004).
- [5] Prousek, J., Čík, G.: Ecology and Environmental Science Fundamentals. Vydavateľstvo STU, Bratislava. 212 s., (2004), ISBN 80-227-2097-6.
- [6] Derco, J., Drtil, M., Bodík, I., Hutňan, M.: Water technology and water sources protection. Skriptum kurzu dištančného vzdelávania - IDEP, FCHPT STU Bratislava, Nadácia otvorenej spoločnosti, Bratislava, 533 s. (2004).
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- [1] Bugár, I., Kováč, J., Matuszná, K., Lukeš, V., Čík, G.: Polymer structure characterization of polythiophenes by fluorescence spectroscopy in solution. Laser Physics 14(4), 527-532, (2004).
- [2] Čík, G., Krajčovič, J., Hubinová, M., Krištín, J., Červeň, I., Šeršeň, F.: Properties of copolymer of 2,2':5',2''-terthiophene-5,5''-dicarboxylic acid and polyethylene oxide. Synth. Met. 140 (2-3), 303-309, (2004).
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- [1] Gašpariková, E., Bodík, I.: Evaluation of domestic wastewater treatment plant operation. Vodní hospodářství 54 (7), 188-191 (2004).
- [2] Derco, J., Dián, M., Rajczyková, E.: Verification of Design for Upgrading of Dynamic Simulation Vodní hospodářství, 57(7) Čistírenské listy 4, III – VI (2004).
- [3] Derco, J., Kovács, A.: Influence of cyclohexanone on oxygen transfer Petroleum and Coal 45 (3-4), 93-95 (2003).

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- [2] Hutňan, M.: Sludges and wastes 2004 Voda (elektron. odb. Časopis) 0 (3), s.1 (2004).
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- [5] Piatrik, M.: Principles of Environmental Audit in Organizations. Environmental management for education and edification, 1(1) pp. 63-73(2004).
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- [7] Tölgyessy, J., Harangozó, M., Rácz, L., Myint, U.: Monitoring of Radionuclides Acta Universitatis Matthiae Belii, Ser. Chem., No.6 6-19 (2002).
- [8] Tölgyessy, J., Koprda, V., Harangozó, M., Tomeček O.: Industrial application of electron accelerators Acta Universitatis Matthiae Belii, Ser. Chem., No. 7 6-16 (2003).
- [9] Tölgyessy, J., Piatrik, M., Földesová, M., Dillinger, P., Harangozó M.: The radiation modification of inorganic and organic solid wastes Acta Universitatis Matthiae Belii, séria chémia, No. 7, 22-28, 2003
- [10] Čík, G.: Global problems with persistence organic pollutants. Odpady 7, 10-11, (2004).

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- [1] Derco, J.: Slovak experience with Approaching the EU Legislation for Wastewater Treatment In: Workshop Central and Eastern European Countries in Oslo, Norway, 10 June 2004
- [2] Drtil, M.: Design and operation of wastewater treatment plants. In: Seminár "Nové trendy v procesoch čistenia odpadových vôd a možnosti intenzifikácie čistiarenských procesov," Bratislava (Slovakia), 22.-26.10.2004. (Pr)
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- [1] Koprda, V., Kassai, Z., Bujnová, A., Bauerová, K., Kassai, A., Dianiška, T.: In Vitro Penetration of Small Radionuclide Ions across the Rat Skin of Different Age. Reduction of Transdermal Contamination. In: Proc. 9. Int. Conf. Perspectives of Percutaneous Penetration, La Grande Motte (France) 13-17 Apr., 2004, Procc.Perspectives in Percutaneous Penetration, Vol. 9a, (KR Brain and KA Walters, Eds.), p.57, (2004). ISBN 0-948917-25-3. (Po)
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- [10] Gašpariková, E., Kapusta, Š., Bodík, I., Kratochvíl, K.: Evaluation of operation for selected wastewater treatment plant - type ANAcomb. In: Zb. Konf. Kaly a odpady 2004, 25.-26.marec 2004, pp. 226-231, ISBN 80-89088-26-0. (Po)
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Contracts

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- [4] Drtil, M.: Evaluation of design of wastewater treatment plant Lemesany. ZoD 30/2004, PROX T.E.C. s.r.o. Poprad, (2004).
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Grants

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Patents, licence, know how

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DEPARTMENT OF FIBRES AND TEXTILE CHEMISTRY

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I. STAFF

Full Professors:

Eberhard Borsig, DrSc., Anton Marcincin, PhD.

Associate Professors:

Michal Krištofič, PhD., Anna Murárová, PhD.

Assistant Professors :

Anna Ujhelyiová, PhD.

Research Fellows:

Eva Bolhová, Marcela Hricová, Jaroslav Legéň, PhD., Ondrej Dolgoš

PhD Students:

Martina Jurenková, Zita Mlynarčíková, Andrej Rusnák, Maria Dulíková, Jozef Ryba, Ľubica Fleischmannová

Technical staff:

Agnesa Chlebáková, Albína Pokorná, Jarmila Nemčeková

II. TEACHING AND RESEARCH LABORATORIES

A. Teaching laboratories:

Laboratory of Polymer Fibre and Fibrous Material Structure (DSC, TMA, Surface Chemistry Properties)
Laboratory of Fibre Technology
Laboratory of Textile Chemistry, Bleaching, Dyeing and Finishing (Ahiba, Pretema)
Laboratory of Fibre and Textile Testing
Laboratory for Fibre Spinning, Drawing and Texturing, extruders 16 and 30 mm

B. Research laboratories:

Laboratory for Thermal and Electrical Properties of Fibres and Textiles (DTA, DSC 7, TGA 7 - Perkin Elmer, Derivatograph Q 1500 D, integral electromer Poly - stat PS-1, Alambeta)
Laboratory for Thermomechanical Properties (TMA-50 M and TA)
Laboratory for Mechanical Properties (Instron, model 1112)
Laboratory of Rheological Properties (Dynamic viscoelastomer model Rheo.200, capillary rheometer, extrusiomer GOTTFERT 20 mm)
Laboratory for Structural Properties (Microscope Olympus model BHT, SALS)
Laboratory for Exhaust Dyeing Process and its Evaluation (Ahiba, Pretema)
Laboratory for Spinning of Fibres (extruders 16 and 30 mm resp.)
Laboratory for fibrous materials based on biopolymers

III. TEACHING

A. Undergraduate Study:

1. semester (Bc)	Macromolecular Chemistry	(2-0 h)	Borsig
1. semester (Bc)	Technology of Materials	(2-0 h)	Marcincin
	Bachelor Project	(0-0-4 h)	
1. semester (Bc)	Macromolecular Chemistry II	(2-1 h)	Borsig
	Physics of Polymers and Paper	(2-2 h)	Krištofič
	Fibre Science and Technology	(2-2 h)	Marcincin, Legéň
	Laboratory of Fibre Science and Technology	(0-0-8)	Krištofič

1. semester (Bc)	Structure of Fibrous Materials	(1-1 h)	Krištofič, Ujhelyiová
	Special and Modified Fibres	(0-2 h)	Marcinčin, Krištofič, Murárová, Ujhelyiová
1. semester (Bc)	Colorants and Textile Auxiliaries	(2-0 h)	Murárová, Ujhelyiová
	Technical Textiles	(2-0 h)	Krištofič, Borsig
	Principles of Textile Engineering	(2-0 h)	Ujhelyiová, Murárová
	Laboratory of Textile Engineering	(0-0-8 h)	Legéň, Mlynarčíková
1. semester (Bc)	Physiology and Comfort of Textiles	(0-2 h)	Murárová, Hricová
1. semester (Bc)	Textile Chemistry and Technology	(2-2 h)	Ujhelyiová, Bolhová
	Technology of Polymeric Films	(2-0 h)	Marcinčin, Krištofič
	Laboratory of Textile Chemistry and Technology	(0-0-10 h)	Bolhová, Rusnák, Marcinčin, Ujhelyiová, Borsig, Krištofič, Murárová
	Fibre and Textile Testing	(2-0 h)	Legéň, Murárová
1. semester (Bc)	Diploma Thesis	(0-0-27 h)	Borsig, Krištofič, Marcinčin, Murárová, Ujhelyiová

IV. CURRENT RESEARCH PROJECTS

Polymer composite fibres

The aim of this project is to find possibilities to use polymer composites obtained by addition of polymers with organic or inorganic fillers in combination with orientation of these polymer systems during spinning what causes other physical changes. At the preparation of these systems nanoparticles as very efficient filler are used. Polymer composites prepared will be characterised from the point of supermolecular structure and physico-mechanical properties.

The aim of the project:

- preparation and adjustment of additives for polymer composite (organic particles with polymer character and inorganic fillers based on silicates).
 - preparation of polymer compatibiliser, especially for composites based on polypropylene
 - optimization of composition of polymer composites for possibility to spin these composites
- VEGA 1/9147/02

Project duration: from 2002 to 2004

Biotechnological Process for Manufacturing Cellulosic Product with added Value

Project is focused to the basic investigation of new biochemical ways how to dissolve the cellulose and change its original form. Method is based on the safe, biodegradable enzymes used instead of toxic dangerous CS₂ with the aim to create products from regenerated cellulose. Biocelsol technologies are break through in comparison with existing processes for preparation of regenerated cellulose and give harmless technologies for modification of cellulose with selected enzymes. Enzymatically modified cellulose is better soluble in water-alkali solutions and its processing to solutions is more simple.

Scientific goals of the project:

- understand enzymatic processes in cellulose and their influence on the structure and processability of the cellulose,
- investigate new products with involved functional properties based on enzymatically modified cellulose,
- ensure exceptional decrease of environmental and health influence in comparison with viscose process,
- prove new, acceptable procedures which reduce production cost in cellulose industry.

FP 505 567-1

Project duration: from 2004 to 2006

C. Nanocomposite fibres based on synthetic polymers

Project is focused to:

- the preparation of nanocomposite PP, PA and PES fibres containing inorganic and organic nanoparticles and polymer additives as well.
- the characterization of structure of nanocomposite synthetic fibres by exfoliation and intercalation of solid particles in fibre forming polymers at high deformation gradients and presence of additives. Results of this project will be a knowledge used at the preparation of nanocomposite fibres with new properties such as hydrophility, better electrostatic properties, antibacterial properties, higher color strength and color fastness. During preparation of nanocomposite fibres a main task is to manage the processing of modified polymers at spinning and drawing and to control a creation of structure and fibre properties as well.

APVT 20-010102

Project duration: from 01.09.2002 to 31.08.2005

V. CURRENT EDUCATION PROJECTS

VI. COOPERATION

A. Cooperation in Slovakia

Institution	Type of cooperation	Responsible person	Duration
Fibrochem, a.s., Svit	common papers	A. Marcinčin	2004
VÚCHV, a.s. Svit	contract 124/2004 contract 30300/K1/03	A. Marcinčin	2004
Rhodia IY, a.s., Humenné	contract 73/2004	A. Marcinčin	2004
SH a.s., Senica	project FP 505 567-1	A. Marcinčin	2004
TnUAD FPT Puchov	common papers	A. Murárová	2004
Polymer Institut of SAV	common papers	E. Borsig	2004

B. International Cooperation

Institution	Type of cooperation	Responsible person	Duration
AUTEX, Gent, Belgium	preparation of AUTEX conference	A. Marcincin	2004
University of Zagreb	preparation of ITC&DC conference	A. Marcincin	2004
TU Liberec	preparation of CEC conference	A. Marcinčin	2004
Institut für Makromolekulare Chemie, A. Ludwigs Univ. Freiburg, BRD	common papers	E. Borsig	2004
TU Liberec	Project SRP ITSATP, Summer School	A. Marcinčin	2004

C. Membership in Domestic Organizations and Societies

Name	Organisation or Society	Position	Valid date
A. Marcinčin	Council of Ministry of Education program, SR,	member	
	Development of young employees and PhD. student personalities	member	
	VUTCH-Chemitex, spol. s r.o., Zilina, Managing Council of Certification	member	
	VEGA Committee	member	
	Editor-in-Chief of journal Vlakna a textil	member	
E. Borsig	Slovak Society of Industrial Chemistry, section Chemical Fibres	member	
	Common branch council for awarding of DSc in 14-05-9 Macromolecular Chemistry	chairmann	
	Common branch council for awarding of PhD in 14-05-9 Macromolecular Chemistry	chairmann	
	Slovak Chemical Society, section Polymers	member	
	Advisory Board SAV for Chemical Sciences	member	
A. Murárová	Slovak Society of Industrial Chemistry Board and its Executive Committee	member of advisory board	
	and its section Chemical Fibres	chairmann	
	Slovak Chemical Society, section Polymers	member	
	Co-editor of journal Vlakna a textil	member	
	Editorial Board of journal Vlakna a textil	member	
A. Ujhelyiová	Slovak Chemical Society, section Polymers	member	
	Slovak Society of Industrial Chemistry	member	
M. Krištofič	Executive Editor of journal Vlakna a textil	member	
	Slovak Society of Industrial Chemistry	member	
	Slovak Chemical Society, section Polymers	member	

Name	Organisation or Society	Position	Valid date
	Editorial Board of journal Vlakna a textil	member	
J. Legéň	Slovak Society of Industrial Chemistry	member	
	Slovak Chemical Society, section Polymers	member	
M. Hricová	Slovak Society of Industrial Chemistry	member	

D. Membership in International Organisations and Societies

Name	Organisation or Society	Position	Valid date
A. Marcinčin	AUTEX, Association of Universities for Textiles, Gent, Belgium	member	
	AUTEX Research Journal, Gent, Lodz, B, PL	member of advisory board	
	Central European Conferences Committee	member	
	Scientific Council, TU Liberec, Faculty of Textiles	member	
	Editorial board of journal Fibres & Textiles in Eastern Europe	member	
E. Borsig	General Assembly of National Representatives of European Polymer Federation, Eindhoven, Netherlands	member	
	Editorial Board of Journal of Macromolecular Chemistry Pure and Applied Chemistry, USA	member	
	Editorial Board of Chemické listy, Prague, Czech Rep.	member	
	Committee for Awarding of DSc for scientific branches 14-05-9 Macromolecular Chemistry, Prague, CZ	member	
	Committee for Awarding of DSc for scientific branches 28-03-9 Technology of Macromolecular Compounds, Prague, CZ	member	

E. Visitors from abroad

Name	Organisation or Institution	State	Date / Duration
S. Hoikkala	Tamlink I-R-D Ltd., Tampere	Finland	27.-30.09./4 days
M. Vehviläinen	University of Tampere	Finland	27.-30.09/ 4 days
J. Janicki	University of Bielsko-Biala	PL	27.-28.09/2 days

F. Visits of Staff Members and Postgraduate Students in Foreign Institutions

Name	Organisation / Institution / Conference	State	Date / Duration
A. Marcinčin	IWCH Lodž	PL	02.-5.02/4 days
A. Marcinčin	TU Liberec	CZ	17.-18.02/2 days
A. Marcinčin	IWCH Lodž	PL	11.3-13.03/3 days
E. Borsig	Univ. of Freiburg	BRD	23.02-31.03/8 days
M. Krištofič	TU Liberec	CZ	14.-15.04/2days
A. Marcinčin	TU Tampere	Finland	18.-21.04/4 days
A. Marcinčin	TU Liberec	CZ	03.-04.05/2 days
E. Borsig	Univ. of Ulm	BRD	06.-10.05/5 days
A. Marcinčin	VUOS Pardubice	CZ	23.-27.05/5 days
E. Bolhová	VUOS Pardubice	CZ	23.-27.05/5 days
M. Hricová	VUOS Pardubice	CZ	23.-27.05/5 days
Ľ.Fleischmanová	TU Liberec	CZ	06.-11.06/6 days
E. Bolhová	TU Liberec	CZ	06.-11.06/6 days
M. Jurenková	TU Liberec	CZ	06.-11.06/6 days
A. Marcinčin	TU Liberec	CZ	10.-11.06/1 days
A. Marcinčin	TU Dresden	BRD	15.-17.06/3 days
A. Marcinčin	Paris, Conference	France	21.-27.06/7 days
A. Marcinčin	Paris, Conference	France	04.-10.07/7 days
E. Borsig	Paris, Conference	France	03.-09.07/7 days
M. Krištofič	Paris, Conference	France	21.-27.06/6 days
A. Marcinčin	IWCH Lodž	PL	31.-04.09/5 days
M. Krištofič	IWCH Lodž	PL	31.-04.09/5 days
A. Murárová	TU Ostrava	CZ	06.-09.09/4 days
Ľ. Fleischmanová	TU Ostrava	CZ	06.-09.09/4 days
A. Rusnák	TU Ostrava	CZ	06.-09.09/4 days
A. Marcinčin	IWCH Lodž	PL	22.-24.09/3 days

Name	Organisation / Institution / Conference	State	Date / Duration
A. Ujhelyiová	IWCH Lodž	PL	22.-24.09/3 days
E. Borsig	Halle, Conference	BRD	28.09.-2.10/5 days
A. Marcinčin	Dubrovnik, Conference	Croatia	01.10.-07.10/7 days
A. Ujhelyiová	Dubrovnik, Conference	Croatia	01.10.-07.10/7 days
A. Marcinčin	EGE, Conference	Turkey	25.-29.10/5 days
A. Murárová	TU Liberec	CZ	05.-08.12/4 days
A. Marcinčin	Bielsko-Biala, Conference	PL	08.-10.12/3 days
A. Ujhelyiová	IWCH Lodž	PL	22.-24.09/3 days

VII. THESES AND DISSERTATIONS

A. Graduate Theses (Bc Degree) for state examinations after three years of study

Name	Title of Thesis	Supervisor
M. Molnárová	Dyeing of chemical fibres in presence of bioactive compounds	A. Ujhelyiová
Z. Morávková	Physico-chemical modification of textile materials	A. Ujhelyiová

B. Graduate Theses (MS Degree) for state examinations after five years of study

Name	Title of Thesis	Supervisor
M. Duliková	Modification of PA 6 fibres by layered silicate	M. Krištofič
P. Holecová	Influence of the macromorphological structure of textile materials on the transport of the heat and the moisture	A. Murárová
D. Ježková	Polypropylene nanocomposite fibers: The influence of the silicate filler on their properties	E. Borsig
A. Košová	The influence of concentrate composition on the evenness of pigmented polyester fibres	A. Marcinčin
M. Kubičková	Nanocomposite synthetic fibres containing the inorganic fillers	A. Marcinčin
K. Vařková	Kinetics of dyeing and radial-distribution of dye at dyeing of blend PP/PES fibres by disperse dyes	A. Ujhelyiová

E. Habilitation Theses

Name	Title of Thesis	Head of board
A. Murárová	Physical modification of fibres (2003)	D. Bakoš

VIII. PUBLICATIONS

CC publications

- [1] Krištofič, M., Alexy, P., Karabcová, N.: Optimisation of Properties of Ternary Copolyamides Based on e-Caprolactam Fibres and textiles in eastern europe, 12 (2), 12-16 (2004).
- [2] Lazár, M., Kleinová, A., Fiedlerová, A., Janigová, I., Borsig, E.: Role of Minority Structures and Mechanism of Peroxide Crosslinking of Polyethylene Journal of Polymer Science: Part A: Polymer Chemistry, Vol. 42, 675-688 (2004).

Publications registered in CA, FSTA and other ISI databases

- [1] Bolhová, E.*, Ujhelyiová, A., Kormendyová, E., Marcinčin, A.: The dyeability of blend polypropylene/polyesters fibres using disperse dyes In: Vlakna a textil, 11 (3), 75-81, 2004
- [2] Hricová, M.*, Marcinčin, A., Karabcová, N., Lučivjanský J.: .: Unevenness of spun dyed PP fibres related to rheological properties of pigment concentrates In: Vlakna a textil, 10 (4), 160-162, 2003
- [3] Hricová, M., Marcinčin, A.: Influence of pigments on the structure and properties of synthetic fibres. I. Pigments and their concentrates, dispersion in polymers In: Vlakna a textil, 10 (4), 180-188, 2003
- [4] Hricová, M., Marcinčin, A.: The influence of pigments on the structure and properties of synthetic fibers. II. Part In: Vlakna a textil, 11 (3), 99-105, 2004
- [5] Jambrich, M., Murárová, A.: Aspects of the development of fibers and fiber's materials In: Vlakna a textil, 10 (4), 194-196, 2003

- [6] Jurenková, M., Marcinčin, A.: Fiber-forming polymer nanocomposites. I. Structure of polymer nanocomposites *Vlakna a textil*, 10 (4), 189-193, 2003
- [7] Krištofič, M., Karabcová, N.: Chemical and physical modification of layered silicates and their influence on the polymer system *Vlakna a textil*, 10 (4), 176-179, 2003
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- [9] Murárová, A., Jambrich, M., Balogová, A.: The influence of textiles material composition on their physiological properties. *Vlákná a textil* 11(1) 3-12, 2004
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DEPARTMENT OF FOOD SCIENCE AND TECHNOLOGY

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Technical staff:

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II. TEACHING AND RESEARCH LABORATORIES

A. Teaching laboratories:

Laboratory of Sugar Technology
Laboratory of Starch Chemistry and Technology
Laboratory of Cereal Technology
Laboratory of Canned Products
Laboratory of Meat and Meat Products
Laboratory of Food Preservation
Laboratory of Milk Chemistry and Technology
Laboratory of Cosmetology

B. Research laboratories:

Laboratory of Sugar Technology
Laboratory of Starch Chemistry and Technology
Laboratory of Cereal Technology
Laboratory of Canned Products
Laboratory of Meat and Meat Products
Laboratory of Food Preservation
Laboratory of Milk Chemistry and Technology
Laboratory of Cosmetology

III. TEACHING

A. Undergraduate Study:

1. semester (Bc)	Fundamentals of Food Technology	2/0/0	Karovičová
	Fundamentals of Hygiene and Sanitation	1/1/0	Hojerová
1. semester (Bc)	Fats and Oleo Chemistry	1/1/0	Schmidt, Sekretár
	Packaging and Packaging Materials	1/1/0	Sekretár
	Cosmetic and Household Chemistry	1/1/0	Hojerová
	Semester Project	0/0/4	All members of the staff
1. semester (Bc)	Food Engineering	2/0/1	Schmidt
	Chemistry and Technology of Saccharides	2/0/2	Dodok, Kostičová

	Theory of Food Preservation	3/0/1	Greif
	Dairy Technology I.	2/0/0	Greifová, Mastihuba
1. semester (Bc)	Laboratory Practice of Dairy Technology I.	0/0/2	Greifová, Mastihuba
	Semester Project	0/0/5	All members of the staff
1. semester (Bc)			
1. semester (Bc)	Cereal Chemistry and Technology	4/0/1	Dandár
	Sugar Technology	4/0/0	Dandár
	Laboratory of the Specialization I.	0/0/4	Kostičová, Güllová
	Preserved and Frozen Food Technology	2/0/1	Karovičová, Greif
1. semester (Bc)	Meat and Poultry Technology I.	2/0/1	Staruch
	Raw Materials for Canning Industry	2/0/0	Karovičová, Staruch
	Laboratory of the Specialization I.	0/0/5	Staruch, Greif, Kohajdová, Karovičová
	Fats, Detergents and Oleochemicals	4/0/0	Schmidt, Sekretár
1. semester (Bc)	Laboratory Practice of Fats, Detergents and Oleochemist	0/0/3	Sekretár, Hojerová
	Dairy Technology II.	2/0/0	Mastihuba, Greifová
	Laboratory Practice of Dairy Technology II.	0/0/3	Mastihuba, Greifová
	Microbiology of Milk, Fats and Cosmetics	1/0/0	Greifová
	Semester Project	0/0/5	All members of the staff
1. semester (Bc)	Chemical Engineering Processes in Saccharide Technology	2/0/0	Dandár
	Technology Optimizing in Canning Industry	1/0/1	Greif
	Laboratory of the Specialization II.	0/0/4	Staruch, Kohajdová, Karovičová, Greif
	Semester Project III.	0/0/5	All members of the staff
1. semester (Bc)	Chemistry and Technology of Cosmetics	2/0/2	Hojerová
	Laboratory Practice of Microbiology of Milk, Fats and Cosmetics	0/0/2	Greifová
	Laboratory of the Specialization II.	0/0/4	
	Meat and Poultry Technology II.	2/0/0	Staruch
1. semester (Bc)	Laboratory of Meat and Poultry Technology II.	0/0/2	Staruch
	By-products in Food Industry	2/0/0	Augustín
	PC Application in Food Industry	2/0/0	Sekretár
	Laboratory of PC Application in Food Industry	0/0/2	Sekretár
4. semester (MSc)	Diploma Work		All members of the staff

IV. CURRENT RESEARCH PROJECTS

A. VEGA Project No 1/9132/02 Processes and factors influenced the durability and safety of food and household chemistry (Š.Schmidt)

Food safety and shelf life of pasteurised dairy products in relation to storage temperatures were evaluated in the frame of general tendency of retail chain to sell the food products with maximal prolonged shelf life. Limitation of pasteurised milk shelf life was found and validated in relation to the toxigenic bacterium *Bacillus cereus*.

The suitable analytical methods for limit control of potential risk ingredients: cosmetic and food antioxidants (butylhydroquinone, butylhydroxyanisole, butylhydroxytoluene), cosmetic preservatives (bronopol, chloracetamide, benzylalcohol, 2-phenoxyethanol, chlorhexidine, triclocarban) and ultraviolet filters (4-aminobenzoic acid, oxybenzone, octylsalicylate) were investigated. In co-operation with National Institute of Public Health were established the condition of High Performance Liquid Chromatography followed by ultra-violet spectrophotometric detection. Methods were validated according to the current Good Laboratory Practice of the National Institute of Public Health, Bratislava for safety supervision on cosmetics and food.

Biosensor for lactulose as an indicator of thermal over processing of dairy products was constructed. Such sensor is applicable for estimation of lactulose in concentrated sterilised milks.

Development of method for preparation of alkyl β -glucosides and β -galactosides catalysed by commercial enzymes or by waste herbal materials.

Enzymatic esterification of prepared glycosides by aliphatic acids and ferulic acid as well as the development of simple assay for ferulic esterase were done.

Esterification of free saccharides by acetyl esterase from *Trichoderma reesei* in water environment was performed.

Project duration: from 01.01.2002 to 31.12.2004

B. VEGA Project No 1/9133/02 Development, optimising and control of new food products with the aim to increase the food quality using biological active substances and modern technologies (Alexander Dandár)

The way of incrustation decreasing in evaporators was studied. Optimal economic conditions of antiincrustant addition were evaluated. Simple and fast methods of sanitary stage of sucrose extraction were worked out.

Fermentation conditions of natural juices in regard to their sensory properties were determined.

Application of different additives and technology modifications in laboratory and industrial conditions resulted in increasing of rolls durability extension.

In study of an effect of natural colorants with antioxidative properties on the quality of food natural raw materials was made the substantial progress. Oxidative influence of buckwheat hulls, wheat sprouts, wheat grits and oats was established.

Knowledge about the properties of herbs regarding their chemical structure and sensory properties became deeper. These are useful base for producers, distributors and consumers with emphasis on their health and preventive effects.

New methods of isolation of the group of biologic active natural substances (glucane, pululane, inuline, xylane, lichenane) were worked out. Their addition into different cereal products has been increased their sensory and medical characteristics.

Influence of lactic acid addition on carcass surface with aim to prolong the meat durability was studied.

In cooperation with SNAS improved HACCP application into food industry (bakery, creamery, butchery).

Project duration: from 01.01.2004 to 31.12.2004

C. Vega Project 1/0102/03 Probiotic bacteria and non-traditional raw materials in production of functional foods with aim to increase their nutritive parameters (J.Karovičová)

Optimisation of cabbage juice fermentation process with application of different microorganisms (Lactobacillus plantarum 92 H, Lactobacillus plantarum CCM 7039, mixed starting culture Lactobacillus plantarum 92H and Saccharomyces cerevisiae C11-3) was made. Isotachophoretic system to determine the markers used in authentication of citrus juices were worked out. The method for determination of biogenic amines in food products applied in fermentation control was developed.

The scientific paper about enterococcus (probiotic bacteria) was published.

Project duration: from 01.01.2003 to 31.12.2005

D. State Program of Research and Development, Life Quality – Health, Nutrition, Education, No 749/s/2003 Probiotic bacteria utilization in the production of lactic fermented vegetable juices (J.Karovičová)

Changes of selected analytical and sensory parameters were studied. In experimental part of the research have been prepared different types of lactic fermented vegetable juices:

a) Juices fermented by Lactobacillus plantarum CCM 7039 with addition of inuline based specimens.

b) Juices fermented by Bifidobacterium longum CCM 4990 with addition of inuline based specimens. Content of inuline (in powder) in these commercially produced specimens was 90 – 94 %. Granulated powder isolated from the chicory radix contained more than 90 % of inuline.

Availability of 100 % tomato juices obtained from retail network has been tested to prepare lactic fermented juices.

Method of capillary isotachopheresis has been applied to determine organic acids, biogenic amines, nitrates and nitrites in prepared juices.

Project duration: from 01.05. 2003 to 31.12.2005

E. State Program of Research and Development, Life Quality – Health, Nutrition, Education, No 748/s/2003 Utilization of natural substances to improve the quality of lipid's food (Š.Schmidt)

Extract from more than 30 natural substances were prepared and screening of their antioxidative and antimicrobial effectiveness to 4 bacteria (Bacillus subtilis, Escherichia coli, Pseudomonas aeruginosa, Staphylococcus aureus) has been done. The most antioxidative effects have been detected in the extracts from rosemary, sage and black tea. The most antimicrobial influence was observed in extracts from rosemary, sage and agrimony. The influence of accelerating factors of oxidation (light, singlet oxygen, metal ions, high temperature, microwave heating) on oxidative stability of lipids (sunflower and rapeseed oils, lard) during their storage in different packages at accelerated tests (Rancimat at 120°C, Oxidograph at 110°C and at 170°C temperature of fritting) was analysed. The results are published yet in 39 papers in different journals and proceedings.

Project duration: from 01.05.2003 to 31.12.2005

V. CURRENT EDUCATION PROJECTS

VI. COOPERATION

A. Cooperation in Slovakia

Institution	Type of cooperation	Responsible person	Duration
Ministry of Agriculture of Slovak Republic, Bratislava	Consultations, Grant No. 524 and 526 (13a and 13b)	Karovičová,J Schmidt,Š	continue
Food Research Institute, Bratislava	Member of Editorial Board of Bull.PV	Dandár,A Schmidt,Š	continue
Slovak Academy of Sciences	Modification of Saccharides Development of Biosensors	Mastihuba,V	continue
Research Institute of Plant Production, Piešťany	Food Quality and Safety	Mastihuba,V	since 2003
TAURIS, Rimavská Sobota	Development and Inovation of Meat Products	Staruch,L	continue
RAJO, Co. Bratislava	Improvement of quality and safety control of dairy products	Hojerová,J	continue
Palma-Henkel, Co. N.Mesto nad Váhom	Educational process	Schmidt,Š Sekretár,S	continue
Palma-Tumys, Bratislava	Educational process	Schmidt,Š Sekretár,S	continue
Institute of Dairy Research, Žilina	Consultation; Development of improved control of food safety for industry	Greifová,M Mastihuba,V. Greif,G.	continue
Slovak Society of Cosmetology, Bratislava	Cooperation at the scientific conferences	Hojerová,J	continue
ADIPO Ltd, Nitra	Consultation	Dodok,L	continue
Central Laboratory MILEX-Progress, Co, Bratislava	Consultation	Greifová,M Mastihuba,V	continue
De Miclén, Co, Levice	Consultation of cosmetics safety	Hojerová,J.	continue
Q-CHEM, Modra	Modification of Saccharides	Bilaničová,D. Mastihuba,V	2003-04

B. International Cooperation

Institution	Type of cooperation	Responsible person	Duration
National Centre for Agricultural Utilization Research, ARS, USDA, Peoria, IL, USA	Enzymatic modification of saccharides	Mastihuba,V.	since 1998
BBSRC Institute of Food Research, Norwich, UK	Development of improved control of food safety for industry	Mastihuba,V Greifová,M	continue
Department of Saccharide's Technology	Publications	Dandár,A	continue
Dublin City University, Biomedical and Enviromental Seneor Technology Centre, Dublin, Ireland	Development of improved control of food safety for industry	Mastihuba,V Greifová,M	continue
Institute of Chemical Technology, Dep. Of Dairy and Fat Technology, Prague	Natural antioxidants	Schmidt,Š Mastihuba,V Greifová,M Sekretár,S	continue
Milcom – Dairy Research Institute, Prague	Development of improved control of food safety for industry	Greifová,M Mastihuba,V	continue
Institute of Food Research, Manchester, UK	Research of Antioxidants	Schmidt,Š Sekretár,S	continue
Akademia Rolnicza, Krakow, Poland	Clarification agents in sugar industry	Dandár,A Kostičová,M	continue
Zuckerforschungsinstitut Tulln, Austria	Problems in sugar industry	Dandár,A.	continue
Technical University Lodž, Poland	Microbial activity during sucrose extraction	Dandár,A. Kostičová,M Gullová,L	continue
Research Institute of Sugar Technology, Prague	Member of Editorial Board of Sugar Papers	Dandár,A	continue

C. Membership in Domestic Organizations and Societies

Name	Organisation or Society	Position	Valid date
Schmidt,Š	Slovak Chemical Society	Member	Since 1995-
Schmidt,Š	Editorial Board of Bull. Of Food Research	Member	Since 1989-
Schmidt,Š	Committee of the Slovak Chemical Society	member	Since 1990-
Schmidt,Š	Grant Agency of ME SR and SAS, editorial board VEGA No. 10	Member	continue
Staruch,L	Slovak Soc. Of Agricultural, FORESTRY, food and Veterinary Sci., Bratislava	Member	Since 1990-
Staruch,L	Foundation SLOVAK GOLD, Bratislava	Member	continue
Staruch,L	The Union of Slovak Butchers	Member	Since 1994-
Staruch,L	Slovak Institute of Technical Normalization, Bratislava	Member	Since 2003-
Staruch,L	Food Processing, Development and Food Products Committee DANUBIUS GASTRO	Judge expert Member	Since 1999- Since 2003-
Dodok,L	Slovak Academy of Agricultural Sci., Bratislava	Member	Since 1995-
Dodok,L	Slovak Institute of Technical Normalization, Bratislava	Member	Since 2003-
Dodok,L	Slovak Agricultural Academy, Nitra	Member	Since 1995
Augustín,J	Slovak Soc. Of Agricultural, FORESTRY, food and Veterinary Sci., Bratislava	Member	Since 1985-
Hojerová,J	Foundation SLOVAK GOLD, Bratislava	Member	continue
Hojerová,J	INCHEBA, Joint Stock Company, Technical Committee for Cosmetics	Member	continue
Hojerová,J	Slovak Society of Cosmetology	President	Since 2000-
Hojerová,J	Commission for Technical Standards No 79, Slovak Institute for Technical Standards	Member	continue
Hojerová,J	Editorial board of DERMA	Member	continue
Hojerová,J	Editorial board of DERMA Revue	Member	continue
Greifová,M	Slovak Chemical Society	Member	Since 1999-
Greifová,M	Scientific board of VÚM, Žilina	Member	Since 2003-
Mastihuba,V	Slovak Chemical Society	Member	continue
Dandár,A	Slovak Soc. Of Agricultural, FORESTRY, food and Veterinary Sci., Bratislava	President	continue
Dandár,A	Slovak Academy of Agricultural Sci., Bratislava	Member	continue
Dandár,A	Slovak Academy of Technical Sciences, Bratislava	Member	continue
Dandár,A	ICUMSA, Slovak National Committee	Member	Since 1980-
Dandár,A	Slovak Agricultural Academy, Nitra	Member	Since 1992-
Dandár,A	SAPV, specialization of Food	Vice-president	continue
Dandár,A	Editorial board of Bull. Of Food Research	Member	continue

D. Membership in International Organisations and Societies

Name	Organisation or Society	Position	Valid date
Schmidt,Š	Federation of European Chemical Societies, division of Food Chemistry	Member	continue
Schmidt,Š	Editorial board of European Journal of Lipid Science and Technology	member	continue
Staruch,L	Editorial board of journal MASO	Member	Since 2003-
Staruch,L	WEPSA, Israel	member	continue
Dodok,L	International Assotiation for Cereal Science and Technology	member	Since 1996-
Augustín,J	Czechoslovak Microbiology Society	member	continue
Hojerová,J	International Federation of Societies of Cosmetic Chemists, USA	member	continue
Greifová,M	Czechoslovak Microbiology Society	member	continue
Dandár,A	American Chemical Society	Member	continue
Dandár,A	International Commission for Uniform Methods of Sugar Analysis – ICUMSA, Italy	Member	continue
Dandár,A	Commission International Technique de Sucrierie – CITS, Brussels, Belgium	Member	continue
Dandár,A	Verein der Zuckerfabriken Österreichs, Viena, Austria	Member	continue
Dandár,A	Stowarzyszenie Technikow Cukrownikow, Wroclaw, Poland	Member	continue
Dandár,A	Scientific board at FCHPT VŠCHT, Prague	Member	continue
Mastihuba,V	The Federal Agricultural Centre, FAL, Braunschweig, Germany	Member	continue

E. Visitors from Abroad

Name	Organisation or Institution	State	Date / Duration
Plocková, M.	University of Chemical Technology, Prague	Czech Republic	June 2004 (2 days)
Fenwick, R.	Institute for Food Research, Agricultural & Food Research Council, Norwich Research Park, Norwich, Norfolk	England	October 2004 (2 days)
Filip, V.	University of Chemical Technology, Prague	Czech Republic	December 2004 (4 days)
Zemanová, J.	University of Technology Brno, Faculty of Chemistry	Czech Republic	December 2004 (1 day)

F. Visits of Staff Members and Postgraduate Students in Foreign Institutions

Name	Organisation or Institution	State	Date / Duration
Kostičová, M. Güllová, L. Dandár, A.	International Conference of Sugar Technology, Luhacovice	Czech Republic	February 2004 (3 days)
Schmidt, Š. Sekretár, S. Karovičová, J. Hojerová, J. Mastihuba, V. Staruch, L. Vajdák, M. Güllová, L.	Pribina, Přebyslav UNILEVER, Nelahozeves Libuše, Prague	Czech Republic	March 2004 (3 days)
Güllová, L. Vajdák, M. Zahradníková, L. Lukáčová, D. Mastihuba, V.	Congress of Chemical Society, Ostrava	Czech Republic	September 2004 (4 days)
Kostičová, M. Güllová, L.	IX. Sesja Sekcji Młodek Kadry Naukowej Polskiego Towarzystwa Technologów Żywności, Krakow		Mai 2004, (3 days)
Dandár, A. Augustín, J. Güllová, L.	AGRANA Hohenau	Austria	December 2004 (1 day)
Dandár, A.	Faculty of Food Technology, Krakow	Poland	October 2004 (3 days)
Dandár, A.	International Conference of Biochemistry, Lodž	Poland	September 2004 (4 days)
Bilaničová, D.	University of Cagliari, Cagliari	Italy	September – December 2004, (4 months)
Greifová, M.	IDF Symposium on Cheese, Prague	Czech Republic	March 2004 (4 days)

VII. THESES AND DISSERTATIONS

A. Graduate Theses (Bc Degree) for state examinations after three years of study

Name	Title of Thesis	Supervisor
Boreková, M.	Ferulylesterase - Occurrence, Utilization, Methods of Assay.	Mastihuba, V.
Dovičičová, K.	Modified Starches and their Use in Industry.	Kostičová, M.
Fekiačová, M.	Gene characterization and expression of enzymes involved to biosynthesis of essential fatty acids.	Kostičová, M.
Földešiová, L.	Food Emulsifiers.	Sekretár, S.
Habaj, L.	Authenticity and Quality Evaluation of Wine.	Kukurová, K.
Húšťavová, D.	Campylobacter Jejuni - Occurrence in Milk	Greifová, M.
Ivanová, B.	Authentication of Alcoholic and Non-Alcoholic Beverages	Kohajdová, Z.
Janáč, L.	Microwave Heating of Fats.	Sekretár, S.
Janegová, J.	Assortment of Lactic Acid Fermented Products in Domestic and Foreign Market and their Influence on Consumer Health.	Kohajdová, Z.
Klasová, S.	Cosmetic and Food Thickeners (Hydrocolloids).	Hojerová, J.
Komarová, M.	Antropozoonos - Pestis Suum, Occurrence and Characteristics.	Staruch, L.

Name	Title of Thesis	Supervisor
Kozempelová,L.	Entry of Listeria Monocytogenes into Mammalian Cells.	Greifová,M.
Kunštek,M.	Trends in Production of Fermented Meat Products in Slovakia and Abroad.	Staruch,L.
Schneiderová,R	History of Chocolate Production.	Kostičová,M.
Slaná,D.	Use of Probiotic Microorganisms with Potential of Enhancement of Food Nutritional Value.	Lukáčová,D.
Stopková,M.	Honey Not Only as a Sweetener.	Gúllová,L.
Škottová,D.	Importance of Rheology in Food Technology.	Hojerová,J.
Šovčíková,D.	Actual Demands of Protective Cosmetics Against UV Radiation.	Hojerová,J.
Vinková,L.	Food Allergy.	Karovičová,J.
Vizváriová,A.	Importance of Rheology in Cosmetics.	Hojerová,J.
Vydrová,J.	Review of Fast Methods for Evidence of Pathogenic Microorganisms.	Greifová,M.
Žiaková,Z.	Novel Types of Raw Stocks, their Characterisation and Use in Non-Alcoholic Beverage Industry.	Karovičová,J.

B. Graduate Theses (MS Degree) for state examinations after five years of study

Name	Title of Thesis	Supervisor
Bajžíková,D.	Comparison of efficiency of lead and lead-free clarification agents.	Dandár,A.
Bolyó,J.	Preparation and application of microbial polyunsaturated fatty acids in cereal products.	Čertík, M.
Brezovický,L.	Fermented meat products – production of whole-muscle meat products.	Staruch,L.
Farkašová,G.	Study of influence of raw stock and additives on rheology of dough.	Dodok,L.
Havranová,A.	Study of microbiological situation of fermented whole-muscle products.	Staruch,L.
Hudáček,J.	Connection between dynamics of fermentation and changes of structure and quality of semi-hard cheeses.	Greifová,M.
Kiss,K.	Modelling of growth and production of biogenic amines by Enterococcus mundtii.	Greif,G.
Kuklišová,J.	Analysis of selected food products in term of their authenticity.	Karovičová,J.
Macharová,L.	Evaluation of quality of tomato products.	Karovičová,J.
Mériová,K.	Induction of expression of internalin B for specific detection of Listeria monocytogenes by ELISA.	Greifová,M.
Mišún,D.	Replacement of milk fat in cow milk lump.	Mastihuba,V.
Nagyová,E.	Antimicrobial activity of selected lactobacilli.	Greifová,M.
Nusová,M.	Analysis of selected components in lactic fermentations by ITP.	Kohajdová,Z.
Olekšáková,J.	Study of influence of raw stock and additives on final product.	Dodok,L.
Požgayová – Penciaková,L.	Analytical, sensory and microbiologic evaluation of coffee beans /Coffea arabica, Coffea robusta/.	Augustín,J.
Širancová,K.	Indirect methods for evaluation of microbial activity during extraction of sucrose.	Kostičová,M.
Trubačová,A.	Role of emulsifiers in stabilisation of fats.	Sekretár,S.
Zahradníková,L.	Influence of selected plant extracts on antioxidative status of rapeseed and sunflower oils.	Schmidt,Š.
Zsemlye,R.	Functional and safety aspects of food and cosmetic hydrocolloids.	Hojerová,J.

C. Dissertations (PhD)

Name	Title of Thesis	Supervisor
Greif,G.	Analysis of biogenic amines in food and their production by microorganisms.	Karovičová,J.

VIII. PUBLICATIONS

Books, Chapters in monographs

- [1] Ondrejka, J., Staruch, L.: HACCP application in the canteens ES STU Bratislava
- [2] Dandár,A., Straka, R.: Who was and who is in the slovak sugar industry. Slovenský cukrovarnícky spolok, Bratislava 85 s (2004) ISBN 80-227-2026-7

CC publications

- [1] Horáková, K., Greifová, M., Seemannová, Z., Gondová, B., Wyatt, G.M.: A comparison of the traditional method of counting viable cells and a quick microplate method for monitoring the growth characteristics of *Listeria monocytogenes*. *Letters in Applied Microbiology* 38 (3), 181-184 (2004).
- [2] Hřčková, M., Šturdík, E., Maliar, T., Zemanovič, J.: Biochemical properties of proteolytic enzymes. *Chem. Listy*, 98, 842-850, 2004
- [3] Karamonová, L., Blažková, M., Fukal, L., Rauch, P., Greifová, M., Horáková, K., Tomaška, M., Roubal, P., Brett, G. M. and Wyatt, G. M.: Development of an ELISA specific for *Listeria monocytogenes* using a polyclonal antibody raised against a cell extract containing Internalin B. *Food and Agricultural Immunology* 00 (0), 1-16 (2004).
- [4] Kremnický, L., Mastihuba, V., Côté, G. L.: *Trichoderma reesei* acetyl esterase catalyzes transesterification in water. *J. Mol. Catal. B, Enzymatic* 2004, 30, s. 229-239.
- [5] Mastihubová, M., Mastihuba, V., Biely, P.: An efficient chemoenzymatic route to methyl 4-O-benzyl-2,3-anhydro-beta-D-lyxopyranoside from methyl beta-D-xylopyranoside. *Carbohydrate Res.*, 2004, 339, s. 425-428.

Publications registered in CA, FSTA and other ISI databases

- [1] Kandárová, H., Jantová, S., Hojerová, J.: New approaches to evaluation of toxicological profile of cosmetic products and their components. *Česko-slovenská dermatologie*, 79, 2, 75-83 (2004) (Index Medicus and Medline)
- [2] Cejpek, K., Staruch, L., Vajciková, Z.: Regional food specialities in Slovakia and possibilities of their industrial production. *Živonosť. Nauka. Technológia. Jakość* 36 (3), 179-185 (2003)
- [3] Kohajdová, Z., Karovičová, J.: Optimisation of method of fermentation of cabbage juice. *Czech J. Food Sci.* 22 (2), 39-50 (2004).
- [4] Pokorný, J., Schmidt, Š., Nguyen, H. T. T.: Functionality changes of natural antioxidants during food processing and storage. *Czech J. Food Sci.* 22 (2004) s. 80-83.
- [5] Sekretár, S., Schmidt, Š., Vajdák, M., Zahradníková, L., Annus, J.: Antioxidative and antimicrobial effects of some natural extracts in lard. *Czech J. Food Sci.* 22 (2004) s. 215-218
- [6] Schmidt, Š., Vajdák, M., Sekretár, S., Koman, V.: Effect of some refining steps on rapeseed oil triacylglycerol structures. *Czech J. Food Sci.* 22 (2004) 346-348.
- [7] Staruch, L., Cejpek, K.: The consumption of meat of some selected animal species in Slovakia. *Živonosť. Nauka. Technológia. Jakość* 36 (3), 186-189 (2003)
- [8] Karovičová, J., Janočková, O., Kohajdová, Z., Lukáčová, D.: Time-intensity study of acid taste for fermented vegetable juices. *Bull. PV* 43 (1-2), 109-117 (2004)
- [9] Kukurová, K., Karovičová, J., Kohajdová, Z.: Methods for the detection of adulteration for authentication of honey. *Bull. PV* 43 (1-2), 25-36 (2004)
- [10] Schmidt, Š., Pokorný, J., Vajdák, M., Sekretár, S., Gordon, M. H.: Oilseeds as a source of antioxidants. *Bulletin potravinárskeho výskumu*, 2003, 42, s. 133-149.
- [11] Schmidt, Š., Vajdák, M., Zahradníková, L., Sekretár, S., Zemanovič, J.: Porovnanie rôznych metód extrakcie lykopénu z rajčiakových produktov. *Bulletin potravinárskeho výskumu*, 2004, 43, s. 79-88.

Other publications

- [1] Hojerová, J., Traubnerová, K.: The new cosmetic regulations. Amendments important in the dermatological point of view. *DERMA - interdisciplinárny časopis pre dermatovenerológiu a príbuzné odbory*, IV, 3, 24-28 (2004) (Indexed in Slovak National Bibliography and Bibliographia Medica Slovaca)
- [2] Greif, G., Greifová, M.: Vplyv teploty na dynamiku rastu a produkciu aminov *Escherichia coli*. *Mliekarstvo* 35(4) 15-18 (2004).
- [3] Kontová, M., Greifová, M.: Cheese protection by some types of lactobacillus. *Mliekarstvo* 35(3) 43-45 (2004).
- [4] Mastihuba, V., Bruončová, I., Greifová, M., Kukurová, K.: Chiral substances in milk products - fats, possibilities. *Mliekarstvo* 2004, 35, s. 46-48.
- [5] Schmidt, Š.: Calculation of energy value of food. *Výživa a zdravie* 48 (1), 19, 2004.
- [6] Staruch, L., Greifová, M.: World Dairy Day at the Chemical and Technological Department of Slovak Technical University in Bratislava. *Mliekarstvo* 35 (2), 4-5 (2004)
- [7] Hojerová, J.: Do you be familiar with the cosmetic products for men? *Derma Revue*, II, (1), 14-15, (2004)
- [8] Hojerová, J.: What on shelves in the children's cosmetics? *Slovenský Výber* VIII, (3), 16-17 (2004)
- [9] Hojerová, J.: Support of chemistry in protection skin against sun radiation. *Derma Revue*, II, (2), 14-15, (2004)
- [10] Hojerová, J.: Do you be familiar with the baby cosmetics? *Derma Revue*, II, (3), 6-9, (2004)
- [11] Kohajdová, Z., Mastráková, Z., Kukurová, K.: Quality evaluation of wine vinegar. *Vinohrad* 42 (3), 18-19 (2004).
- [12] Schmidt, Š.: Ako stanovujú výrobcovia potravín ich výživovú hodnotu? *Quark*, 2004 (8), s. 22.
- [13] Schmidt, Š.: Čo viete a nevíete o kuchynskej soli? *Quark*, 2004 (11), s. 43.
- [14] Schmidt, Š.: Prečo sóda vo fľaši viac šumí, keď ju zatrasieme, ako keď je v pokoji? *Quark*, 2004 (11), s. 22.
- [15] Staruch, L., Feriancová, J.: Fast methods of food hygiene analysis. *Gastro* 15 (11-12), 1-3 (2004)
- [16] Staruch, L., Palušová, L., Havranová, A.: There are not sausages as sausages. *Terč* 9(4), 15-17 (2004)

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- [1] Gullová, L.*, Kostičová, M., Dandár, A., Kopecký, J., Paulenová, L.: Monitoring of SUCAZUR antiscaling effect during evaporation of juices. In: Cukrovarnícka konference 2004, Luhačovice 11.-13.2.2004
- [2] Kačeňák, I.*, Sekretár, S., Dandár, A.: Modern packing methods of their influence on the safety and durability of food products In: Medzinárodná konferencia : The influence of packing methods and food preservation technologies on human health, Krakow 22-23.4.2004
- [3] Kostičová, M.*, Gullová, L., Dandár, A., Kopecký, J.: Contribution to the evaluation of methods for monitoring microbial activity in the extractor. In: Cukrovarnícka konference 2004, Luhačovice 11.-13.2.2004
- [4] Šajbidor, J.*, Dandár, A.: University education of food engineer in the Slovak Republic. In: Medzinárodná konferencia "Polska żywność i napoje na rynkach Unii Europejskiej - szanse i zagrożenia", Krakow, 15.10.2004

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- [1] Güllová, L.*, Kostičová, M., Dandár, A., Kopecký, J.: The reduction of incrustation creation during evaporation of juices in the sugar factory. In: Polska Żywność - stan obecny i perspektywy, IX Sesja Sekcji Młodej Kadry Naukowej Polskiego Towarzystwa Technologów Żywności, Kraków 25.-26. maj 2004, s. 66-67.
- [2] Kontová, M.*, Greifová, M.*, Greif, G.: Inhibition of Cheese Spoiling Microorganisms by Metabolites from Lactobacilli. In: Proc. IDF Symposium on Cheese: Ripening, Characterization and Technology. Prague (Czech Republic), March 21-25, 2004. Ed. Prague Institute of Chemical Technology, Czech Committee of IDF, pp.117 (2004). ISBN 80-86257-35-5. (Po)
- [3] Kostičová, M.*, Güllová, L., Dandár, A., Kohajdová, Z., Hybenová, E.: Evaluation of analytical methods of microbial activity during sucrose extraction from sugar beet. In: Polska Żywność - stan obecny i perspektywy, IX Sesja Sekcji Młodej Kadry Naukowej Polskiego Towarzystwa Technologów Żywności, Kraków 25.-26. maj 2004, s. 83-84.
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- [6] Kontová, M., Greifová, M.*, Greif, G., Vollek, W.: Aureobasidium pullulans-a yeast contaminant in dairy technology. In: Proc. HYGIENA ALIMENTORUM XXV. Štrbské Pleso (SR), maj 27-28, (2004). Ed. Univerzita veterinár. Lekárstva Košice, pp. 135-138 (2004). ISBN 80-88985-99-4. (Pr)
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- [10] Dodok, L., Hozová, B., Buchtová, V., Staruch, L., Košťálová, Z.: The influence of additives on the steadiness of dough and quality of roll. In: Zborník príspevkov z XXXV.Symposium o nových smerech výroby a hodnotení potravín. Skalský Dvur 24-26 maj 2004. ČR VUP, Praha.s. 86-88 (2004) ISBN 80-902671-8-1 (Po)
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- [12] Dodok, L., Hozová, B., Šturdík, E., Staruch, L., Olekšáková, J., Farkašová, G., Košťálová, Z.: Wheat spelt - the renaissance of renewed-old cereal. In: Zborník referátov a posterových príspevkov z konferencie Výživa – potraviny – legislatíva, Detva 22 – 24.9 2004, s. 316-320. ISBN 80-227-2155-7.
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Contracts

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Grants

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Others

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- [2] Ondrejka, J., Staruch, L.: HACCP application in the canteens ES STU Bratislava
- [3] Dandár, A., Straka, R.: Who was and who is in the slovak sugar industry. Slovenský cukrovarnícky spolok, Bratislava 85 s (2004) ISBN 80-227-2026-7

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DEPARTMENT OF GRAPHIC ARTS TECHNOLOGY AND APPLIED PHOTOCHEMISTRY

Head of Department:
Assoc. Prof. Michal Čeppan, PhD

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I. STAFF

Associate Professors:
Michal Čeppan, PhD; Milan Mikula, PhD; Ján Panák, PhD

Assistant Professors :
Bohuslava Havlínová, PhD; Viera Jančovičová, PhD

Research Fellows:
Vladimír Dvonka; Zuzana Jakubíková; Juraj Kindernay, PhD. (till 31. 10. 2004); Milena Reháková, PhD

PhD Students:
Erika Hrehorová; Zdenka Klúčiarová (since 1. 10. 2004); Iveta Mrláková (since 1. 11. 2004); Miriam Turanová (since 1. 10. 2004); Alexandra Valaseková (since 1. 10. 2004); Branislav Prosnan

Technical staff:
Mária Bardúnová; Stanislava Kováčová

II. TEACHING AND RESEARCH LABORATORIES

A. Teaching laboratories:

Laboratory of Printing Technology
Laboratory of Photochemistry and Photography
Laboratory of Optical Spectroscopy and Photometry
Laboratory of Thin Films and Plasma Technology
Laboratory of Rheology

B. Research laboratories:

Laboratory of Absorption Spectroscopy and Colorimetry

III. TEACHING

A. Undergraduate Study:

1. semester (Bc)	Paper and Printing, Graphic Arts	2/2	Krkoška, Panák
	Term Project	0/4	Mikula and other members of the academic staff
1. semester (Bc)	Colloids Systems and Interfaces	2/1/0	Bakoš, Jakubíková, Mikula
	Polymer and Paper Physics	0/2/0	Jančovičová
	Photochemistry and Photography I.	2/1/0	Čeppan
	Surface and Thin Film Technology	2/0/0	Mikula
1. semester (Bc)	Advanced Laboratory Course I.	0/0/9	Havlínová, Jančovičová, Mikula
	Typography and Text Processing	0/2/0	Dvonka
1. semester (Bc)	Photochemistry and Photography II.	2/0/0	Čeppan
	Printing Technology I.	2/0/0	Panák
	Advanced laboratory Course II.	0/0/7	Čeppan, Dvonka, Havlínová, Jančovičová
	Planning for Printing Production	0/2/0	Panák, Dvonka
1. semester (Bc)	Text and Image Processing	1/1/0	Čeppan, Dvonka
1. semester (Bc)	Printing Technology II.	2/0/0	Panák
	Repronc	1/3/0	Mikula, Dvonka
	Advanced Laboratory Course III:	0/0/10	Panák, Dvonka
1. semester (Bc)	Diploma Thesis	0/0/27	members of the academic staff

IV. CURRENT RESEARCH PROJECTS

5th Framework Programme of European Commission: High Productivity and Low Cost for the Encapsulation of Thin Film Solar Cells (NAS-HIPROLOCO) (Milan Mikula)

Development of new, material savings, energy savings, automated and cost effective encapsulation systems and processes for thin film solar cells. Structural analysis of multilayer system based on polymer foil substrate and inorganic and polymeric layers. The quality of interfaces and their role in adhesion and long term stability of the system. The study of the barrier properties against the permeation of oxygen and water vapour, the permeation mechanism water through inorganic and organic barrier layers. Ageing of the barrier properties. Detailed physical and chemical analysis of the high barrier layer system.

Project duration: from 01. 09. 2002 to 31. 08. 2004

VEGA Project No 1/9146/02 Preparation and Modification of Thin Surface Layer Properties of Image-Generating Structures and Their Substrates (Milan Mikula)

New type of atmospheric surface discharge treatment of polymer foil substrates considering printability, metalization, lamination, adhesion, mechanical and optical properties of this system in comparison with still-in-use barrier discharge ("corona"). New polymers and copolymers preparation by means of photoinitiated polymerization in thin layers with wanted physical and chemical properties. New information about photochemical reactions of selected photopolymer systems. Photochemical modification of water-soluble based polymers layers, changing their hydrophilic, optical and permeation properties with reference to the imaging technology.

Project duration: from 01. 01. 2002 to 31. 12. 2004

5th Framework Programme of EU: Thematic Network /EVK4-CT-2002-20010 Transitional Metals in Paper (MIP), (Michal Čeppan)

Transitional metals may cause an accelerated ageing of historic paper documents, drawings and other cellulose containing objects. The aim of the network MIP is to exchange present knowledge related to the effects and on how to reduce the effects of transitional metals in paper and how to fit in these results to innovative conservation strategies consisting of assessments methods and treatment technologies.

Project duration: from 01. 03. 2003 to 01. 03. 2006

Vega project No 1/9145/02 Properties of Materials, Constituents and Structures of Printed Images on Polymeric Substrates (Michal Čeppan)

Development and implementation of the methods of imaging photometry and image analysis of printed images structures on polymeric. Development of method for accelerated light ageing of paper, printing inks, and prints using metal-halogen and fluorescent lamps. Construction of laboratory system for accelerated light ageing using metal-halogen and fluorescent lamps, its basic characterization and calibration. Evaluation of methods and mechanism of printing inks conservation against ageing and attaining new knowledge about relation between various types of paper and inks during ageing of graphic structures on polymeric substrates. Study of influence of fountain solution composition and amount of emulsified fountain solution on rheological properties of offset printing inks. Explaining the influence of printing inks on the emulsions printing ink – fountain solution.

Project duration: from 01. 01. 2002 to 31. 12. 2004

Project of ME SR No 661/2003 Preservation, Stabilization and Conservation of Traditional Information Supports in the Slovak Republic (Dušan Bakoš, Milena Reháková)

This project covers programme of saving, stabilization and conservation of traditional holders of information (books, archival documents etc.). Big portion of cultural heritage stored in historical books and archival documents is endangered with destructive impacts of abiotic and biotic factors. This can cause irretrievable loss of cultural heritage of Slovak Republic. Solving of this problem is divided into two time steps. First includes years 2003 - 2005 and its subject covers basic research. Except of this, second step will also include applied research and development.

Project duration: from 01.10. 2003 to 31.10. 2005

APVT Project No. 20-034202 The Deterioration of Historical Manuscripts and Documents Related to Transitional Elements in Writing Inks (Michal Čeppan)

In overall there are 13.1 mil. pieces of threatened documents and manuscripts destined for preservation in the Slovak Republic. Hand written documents (letters, letter sets, drawings, book pages etc.) often contain transitional elements (mainly copper and iron) in their inks which cause and promote destruction and degradation processes of supporting lignocelluloses materials.

This project is focused on investigation of ageing process reactions and kinetics by modern optical and spectral methods.

Gathered knowledge should contribute to material and method selection positively affecting the durability and capacity of historical documents and manuscripts preservation in feasible economical and ecological conditions.

Project duration: from 01. 01. 2004 to 31. 12. 2006

6th Framework Programme of European Commission: Innovation and Sustainable Development in the Fibre Based Packaging Value Chain. (SUSTAINPACK) (Dušan Bakoš, Milan Mikula).

The participation is based on the study of the deposition kinetics of polymer emulsion particles to the pulp fibers, rate of deposition, degree of cover, retention, retention agents – polyelectrolytes and characterization of materials.

Particularly, it includes photo- and plasmochemical activation, modification and/or covering of cellulose fibres in suspension or in a paper-like material, and characterization of materials and activation/deposition kinetics by FTIR spectroscopy, UV Vis. spectral and colorimetry analysis, wetting, adsorption, mechanical and barrier properties measurements.

Project duration: from 01. 06. 2004 to 31. 5. 2008

APVT Project No 26-038602 The Influence of Fiber Net and Fiber Properties on Transfer and Qualitative Paper Parameters. Phase 6 – Study of the Printing Quality Evaluation (Juraj Gigac, Ján Panák)

The printing characteristics of selected offset printing papers samples – Transfer curves measurements and determination of Walker-Fetsko and Tolenaar-Oittinen equations parameters and their correlation with some paper parameters. Study and comparison of the current print quality evaluation methods. Development of a new evaluation method for the missing screen dots based on an image analysis. Optimization of the fractal analysis for the characterization of the printing paper properties and prints printed on them. Evaluation of the screen dots and details reproductions using modulatory transfer function.

Project duration: from 01. 02. 2004 to 30. 6. 2006

V. CURRENT EDUCATION PROJECTS

VI. COOPERATION

A. Cooperation in Slovakia

Institution	Type of cooperation	Responsible person	Duration
Purgina	Investigation and evaluation of printing colouring for different printing technologies	Krchňavý Rastislav, technologist, Pri Šajbách 1, 831 06 Bratislava	01. 10. 2003 -
Slovak National Archives	Study of ageing of printed documents	Hanus Jozef, head of the Department of archival preservation, Drotárska cesta 42, 817 01 Bratislava	01. 01. 2000 -
Institute of Physics SAS	Amorphous a-Si:H structures for solar cells (VEGA project) Study of barrier layers (EC project)	Pinčík Emil, Dúbravska cesta 9, 845 11 Bratislava	01. 01. 2001 -
Faculty of Mathematics, Physics and Informatics, CU, Bratislava	Polymer surface treatment by atmospheric discharges	Černák Miroslav, Mlynská dolina, 842 48 Bratislava	01. 09. 2000 -

B. International Cooperation

Institution	Type of cooperation	Responsible person	Duration
Departement de Photochimie Generale, Université de Haute Alsace, Mulhouse, France	UV curing reaction of waterbased clearcoats	Decker Christian, professor, 3 rue Alfred Werner, Mulhouse Cedex, France	01. 09. 2002 -
Fraunhofer Institute Process Engineering and Packaging (IVV), Freising, Germany	Research of barrier layers on flexible foils (EC project)	Noller Klaus, dr., Fraunhofer Inst. IVV, 853 54 Freising	01. 09. 2002 -
Fraunhofer Institute for Silicate Research, Würzburg, Germany	Properties of Ormocer lacquer layers (EC project)	Amberg-Schwab Sabine, dr., Fraunhofer Inst. ISC, 970 82 Würzburg	01. 09. 2002 -
Faculty of Chemistry, Technical University Brno, Czech Republic	Photochemical properties of light sensitive layers	Michal Veselý, Purkyňova 118, 612 00 Brno	01. 09. 2001 -
State Central Archives in Prague, Czech Republic	Longlasting measurements of nonaged and aged papers	Đurovič Michal, head of department, Archivní 4, 149 01 Praha 4 - Chodovec	01. 01. 2001 -
Pulp and Paper Institute Ljubljana, Slovenia	Analysis of coatings of paper for ink jet printing	Hladnik Ales, Bogišičeva 8, SI-1000 Ljubljana	01. 09. 2004 -
Netherlands Institute for Cultural Heritage	Analysis of spectra of historical documents	Han Neevel, 1070 KA Amsterdam, Netherlands	01. 09. 2004 -

C. Membership in Domestic Organizations and Societies

Name	Organisation or Society	Position	Valid date
Čeppan Michal	Slovak Union for Industrial Chemistry	member	1980 -
Dvonka Vladimír	Slovak Union for Industrial Chemistry	member	1996 -
Havlinová Bohuslava	Slovak Union for Industrial Chemistry	member	1980 -
Jančovičová Viera	Slovak Union for Industrial Chemistry	member	1999 -
Mikula Milan	Slovak Union for Industrial Chemistry	member	1980 -
Panáč Ján	Slovak Union for Industrial Chemistry	member	1978 -
Reháková Milena	Slovak Union for Industrial Chemistry	member	2001 -

D. Membership in International Organisations and Societies

Name	Organisation or Society	Position	Valid date
Čeppan Michal	European Photochemistry Association	member	1990 -
Čeppan Michal	International Society of Imaging Science and Technology, Springfield, USA	member	1985 -
Michal Čeppan	Graphic Arts Technical Foundation, Sewickley, USA	member	1988 -

E. Visitors from abroad

Name	Organisation or Institution	State	Date / Duration
Amberg-Schwab, S.	Fraunhofer Institute for Silicate Research, Würzburg	Germany	March 2004 (2 days)
Erlor, B.	Isovolta AG, Werndorf	Austria	March 2004 (2 days)
Förster, J.	Klöpper Mechanical Engineering Technics, Stuttgart	Germany	March 2004 (2 days)
Kessler, F.	Centre for solar energy and hydrogen resear Baden Wuttenberg, Stuttgart	Germany	March 2004 (2 days)
Lohwasser, W.	Alcan Packaging Service, Neuhausen	Switzerland	March 2004 (2 days)
Noller, K.	Fraunhofer Institute Process Engineering and Packaging, Freising	Germany	March 2004 (2 days)
Plessing, A.	Isovolta AG, Werndorf	Germany	March 2004 (2 days)
Schroeder, S.	Centre for solar energy and hydrogen resear Baden Wuttenberg, Stuttgart	Germany	March 2004 (2 days)

Name	Organisation or Institution	State	Date / Duration
Vaško, K.	Fraunhofer Institute Process Engineering and Packaging, Freising	Germany	March 2004 (2 days)
Van der Vleuten, P.	Free Energy International, Eindhoven	Netherland	March 2004 (2 days)
Weber, U.	Fraunhofer Institute for Silicate Research, Würzburg	Germany	March 2004 (2 days)
Hladník, A.	Pulp and Paper Institute, Ljubljana	Slovenia	May 2004 (2 days)
Kaplanová, M.	University of Pardubice, Pardubice	Czech Republic	June 2004 (2 days)
Lapčík, L.	Tomas Bata University, Zlín	Czech Republic	June 2004 (2 days)
Veselý, M.	Brno University of Technology, Brno	Czech Republic	June 2004 (2 days)

F. Visits of Staff Members and Postgraduate Students in Foreign Institutions

Name	Organisation / Institution / Conference	State	Date / Duration
Čeppan, M.	Museu Molí paper de Cappelades	Spain	February (6 days)
Čeppan, M.	Tomas Bata University, Zlín	Czech Republic	February (1 day)
Jančovičová, V.	Weilburger Graphics GmbH, Gerhardshofen	Germany	February (3 days)
Panáč, J.	DRUPA 2004, Düsseldorf	Germany	May (5 days)
Havlíňová, B., Turanová, M., Hnojčíková, A.	State Central Archives in Prague	Czech Republic	March (5 days)
Čeppan, M.	University La Rochele	France	July (7 days)
Reháková, M.	Royal Institute for the Study and Conservation of Belgium's Artistic Heritage, Brussel	Belgium	September-December (4 months)
Mikula, M., Čeppan, M., Jančovičová, V.	Fraunhofer Institute for Silicate Research, Würzburg	Germany	August (4 days)
Čeppan, M.	TNO Building and Construction Research, Haag	Netherland	September (5 days)
Panáč, J.	University of Pardubice, Pardubice	Czech Republic	September (3 days)
Panáč, J.	7th Meeting of Graphic Arts Engineers in Czech and Slovak Republics	Czech Republic	October (2 days)
Čeppan, M., Havlíňová, B., Turanová, M.	Int. Conference Durability of Paper and Writing, Ljubljana	Slovenia	November (6 days)
Čeppan, M.	Brno University of Technology	Czech republic	December (1 day)
Čeppan, M.	Tomas Bata University, Zlín	Czech Republic	December (1 day)

VII. THESES AND DISSERTATIONS

A. Graduate Theses (Bc Degree) for state examinations after three years of study

Name	Title of Thesis	Supervisor
Bražinová, V.	The enhancement of print stability in the ageing process	Reháková, M.
Klásková, Z.	The influence of curing degree on the acrylate UV varnish gloss	Jančovičová, V.
Kovašičová, Z.	The influence of light sensitive layer composition on the photopolymerization course	Kindernay, J.
Lendacký, M.	The fractal measurement of ink-jet samples	Dvonka, V.
Mináriková, K.	Contact angle measurement and its interpretation	Jakubíková, Z.
Pořková, A.	The influence of layer thickness on the gloss of UV cured photopolymeric system	Kindernay, J.
Raková, S.	The influence of oxygen on photopolymerization in thin layer	Jančovičová, V.
Stolárik, I.	The influence of temperature on offset ink transfer	Panáč, J.
Šátková, B.	The study of ink stability influenced by germicide and ageing	Havlíňová, B.

B. Graduate Theses (MS Degree) for state examinations after five years of study

Name	Title of Thesis	Supervisor
Gašparík, M.	Colour management in ink-jet printing	Karpinský, Ľ.
Hergottová, Z.	Physico-chemical properties of hybrid varnish layers on the polymer substrate	Mikula, M.
Hnojčíková, A.	The stability of newspaper inks on Whatman paper	Havlíňová, B.
Kelemenová, K.	Preparation and properties of layers on the base of modified watersoluble polymers	Jančovičová, V.
Lathová, D.	The ageing of historical documents caused by iron-gall inks	Čeppan, M.
Masaryk, V.	Physico-chemical and optical properties of PP foil surface treated in atmospheric discharge	Mikula, M.
Šarközi, Š.	The influence of new type papers on the printing image properties	Panák, J.
Turanová, M.	The study of resistance and stabilization of graphical information in the ageing process	Havlíňová, B.
Uhrín, Ľ.	The study and optimization of UV flexo ink proofing	Panák, Ľ.
Valovičová, M. rod. Valková	Methodology, proposal and verification of quantitative classification criterion of historical prints	Reháková, M.
Zacharová, J.	The study of colouring in flexography and letterpress printing	Reháková, M.

VIII. PUBLICATIONS

CC publications

- [1] Brezová, V., Pigošová, J., Havlíňová, B., Dvoranová, D., Ďurovič, M.: EPR study of photochemical transformations of triarylmethane dyes. *Dyes and Pigments* 61, 177-198 (2004)
- [2] Buc, D., Mikula, M., Music, D., Helmersson, U., Jin, P., Nakao, S., Li, K., Y., Shum, P., W., Shou, Z., Čaplovičová, M.: Ruthenium oxide films prepared by reactive unbalanced magnetron sputtering. *J. Electric. Engineering* 55, 1-2, 39-42 (2004).
- [3] Decker C., Lorinczova I.: UV-Radiation Curing of Waterborne Acrylate Coatings. *JCT Research* 1, 247-256 (2004)
- [4] Pincik, E., Kobayashi, H., Takahashi, M., Fujiwara, N., Brunner, R., Gleskova, H., Jergel, M., Mullerova, J., Kucera, M., Falcony, C., Ortega, L., Rusnak, J., Mikula, M., Jurani, R., Kral, M.: Photoluminescence, structural and electrical properties of passivated a-Si:H based thin films and corresponding solar cells. *Applied Surface Science* 235, 351-363 (2004).

Publications registered in CA, FSTA and other ISI databases

- [1] Cedzová, M.*, Tiňo, R., Reháková, M., Vizárová, K., Šutý, Š.: Influence of light on the change of properties of copy paper and of sulphate kraft pulp during accelerated ageing. *Papír a celulóza* 59(10), 297-298 (2004)

Other publications

- [1] Čeppan, M., Láthová, D., Hanus, J.: Destruction of historical documents - iron-gall ink corrosion. *Papier a polygrafia*, 2 (4), 42-43 (2004)

Lectures and posters

- [1] Cedzová, M.*, Tiňo, R., Reháková, M., Vizárová, K., Šutý, Š.: Influence of light on the change of properties of copy paper and of sulphate kraft pulp during accelerated ageing. In: International conference Pulp and Paper, Brno (Czech Republic), June 16-18, 2004

Text books

- [1] Reháková, M., Vizárová, K.*, Jančiová, D., Valovičová, M., Varga, Š.: Preselection of historical books in the process of their stabilization. In: Proc. Int. Conf. Durability of Paper and Writing. Ljubljana (Slovenia), Nov. 16-19, 2004. Ed.: Kollar, J., Strlic, M., Havermans, J.B.G.A., pp. 68-69 (2004). ISBN 961-6162-98-5. (Po)
- [2] Turanová, M., Havlíňová, B., Čeppan, M.: Deacidification of aged nevsprints. In: Proc. Int. Conf. Durability of Paper and Writing. Ljubljana (Slovenia), Nov. 16-19, 2004. Ed.: Kollar, J., Strlic, M., Havermans, J.B.G.A., pp. 70-71 (2004). ISBN 961-6162-98-5. (Po)
- [3] Hanus, J., Mináriková, J., Havlíňová, B., Švorcová, L., Brezová, V., Hanusová, E.: Changes of some arylmethany dyes on paper during conservation treatment. In: Proc. ICOM-CC Graphic Documents Meeting. Ljubljana (Slovenia), March. 11-12, 2004. (Pr)
- [4] Jakubíková, Z., Mikula, M., Prosnan B.: Contact angles and surface free energy of oxide layers. In: Int.conf. Silicon - News in Science and Technology SNST 2004, Podbanske 29.2-3.3. 2004, Slovakia, Proceedings, p. 50-54, SAV Bratislava 2004, ISBN 80-89186-03-3. (Po)

- [5] Mikula, M., Jakubíková, Z., Prosnan, B.: Surface properties of dielectric barrier discharge treated polypropylene in air and nitrogen. In: Solid State Surfaces and Interfaces IV, Smolenice 8.-11.11. 2004, Slovakia, Proc. p. 57-58, SAV Bratislava 2004. (Po)
- [6] Mikula, M.*, Vasko, K., Prosnan, B., Kúdela, P., Jakubíková Z.: SiO_x based permeation barrier layers on flexible polymer foils. In: Int.conf. Silicon - News in Science and Technology SNST 2004, Podbanske 29.2-3.3. 2004, Slovakia, Proceedings, p. 109-114, SAV Bratislava 2004, ISBN 80-89186-03-3. (Ppr)
- [7] Müllerová, J.*, Šutta, P., Jurečka, S., Mikula, M.: Effect of hydrogen dilution on optical and structural properties of PECVD deposited a-Si:H thin films. In: 10th Int.Conf. on Applied Physics of Condensed Matter APCOM, Častá-Píla 16.-18.jun 2004, Slovakia, Proceedings, p. 173-176, FEEIT SUT Bratislava 2004, ISBN 80-227-2073-9. (Ppr)
- [8] Buc, D.*, Bello, I., Mikula, M., Kwok, D., T., K., Chu, P., K., Siu, G., G.: Removal of oxide ions from ruthenium oxide films by PIII injection of nitrogen. In: 5th Int. Conf. on Advanced Semiconductor Devices and Microsystems ASDAM 2004, Oktober 17-20, 2004, Smolenice, Slovakia, Proc. p. 127-130. FEEIT SUT Bratislava 2004 ISBN 0-7803-8535-7. (Pr)
- [9] Černáková, L.*, Kováčik, D., Mikula, M., Čermák, M., Špírková, M.: Chitosan immobilization onto the atmospheric-pressure plasma-functionalized polypropylene nonwovens. In: 9th Int. Symp. on High Pressure Low Temperature Plasma Chemistry, Hakone IX, Padova, Italia, August 23.-27. 2004, Cont.pap. 30-01, 5 pages, (Pr).
- [10] Černáková, L., Kováčik, D., Mikulášová, M., Mikula, M., Buček, A., Čermák, M.*: Low-cost plasma activation and chitosan immobilization onto PP nonwovens. In: 14th Annual Int. TANDEC Nonwovens Conf., Knoxville, Tennessee, Nov. 9.-11. 2004, Proc. 2.61-2.68. (Pr)
- [11] Kopani, M.*, Rychly, B., Kristin, J., Jorik, V., Mikula, M., Jakubovsky, J., Kalina, P., Wlachowska, B., Zitnanska, I., Polak, S.: Dense particles in pons cerebrum of a patient with the neurological form of Behcet disease: physical-chemical properties of dense particles. In: 13th European Microscopy Congress EMC 2004, 22.-27. august 2004, Antwerp. Cont. pap. 195-196. (Pr)
- [12] Havlíňová, B.*, Hnojčíková, A., Turanová, M.: The influence of paper accelerated ageing on offset ink stability on paper substrate. In: Zborník Polygrafia Academica. Bratislava (Slovenská republika), 9.-10. septembra 2004. Vyd. Vydavateľstvo STU, str. 176-183 (2004). ISBN 80-227-2100-X. (Po)
- [13] Jakubíková, Z.*, Prosnan, B., Mikula M.: Acid-base approach of surface energy changes of corona-treated polypropylene. In: Zborník Polygrafia Academica. Bratislava (Slovenská republika), 9.-10. septembra 2004. Vyd. Vydavateľstvo STU, str. 137-144 (2004). ISBN 80-227-2100-X. (Po)
- [14] Jančovičová, V.*, Kindemay, J., Raková, S., Richter, J.: Varnish UV curing in inert environment. In: Zborník Polygrafia Academica. Bratislava (Slovenská republika), 9.-10. septembra 2004. Vyd. Vydavateľstvo STU, str. 191-196 (2004). ISBN 80-227-2100-X. (Po)
- [15] Kindemay, J.*, Jančovičová, V., Klásková, Z., Polková, A.: The influence of curing conditions on UV varnish gloss. In: Zborník Polygrafia Academica. Bratislava (Slovenská republika), 9.-10. septembra 2004. Vyd. Vydavateľstvo STU, str. 184-190 (2004). ISBN 80-227-2100-X. (Po)
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- [17] Dvonka, V.*, Čeppan, M., Lendacký, M.: Utilization of modern measurement technologies for printing quality evaluation. In: Zborník Polygrafia Academica. Bratislava (Slovenská republika), 9.-10. septembra 2004. Vyd. Vydavateľstvo STU, str. 119-126 (2004). ISBN 80-227-2100-X. (Pr)
- [18] Gigac, J., Šutý, Š.*, Valáseková, A., Strežo, P.: Evaluation of paper surface properties and application of image analysis for offset and ink-jet printing. In: Zborník Polygrafia Academica. Bratislava (Slovenská republika), 9.-10. septembra 2004. Vyd. Vydavateľstvo STU, str. 20 - 30 (2004). ISBN 80-227-2100-X. (Pr)
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- [20] Jakucewicz, S., Panál, J.*: Printability of new type uncoated papers. In: Zborník Polygrafia Academica. Bratislava (Slovenská republika), 9.-10. septembra 2004. Vyd. Vydavateľstvo STU, str. 83 - 101 (2004). ISBN 80-227-2100-X. (Pr)
- [21] Mikula, M.*, Čeppan, M., Jančovičová, V., Reháková, M.: Barrier layers, stability of prints and its quality In: Workshop 11.-13.2. 2004, Zborník, s. 66-67, FCHPT STU Bratislava 2004, ISBN 80-227-2023-2. (Pr)
- [22] Kopáni, M.*, Kobayashi, H., Mikula, M., Takahashi, M., Sasinková, V., Pinčík, E.: Infrared spectroscopy of amorphous silicon based thin layers. In: SILICON 2004, 2.-5. 11. 2004, Rožnov pod Radhoštěm, Czech Rep., Contr. p. 36, FÚ AVČR 2004. (Pr)
- [23] Kopani, M.*, Polak, S., Rychly, B., Kristin, J., Jorik, V., Mikula, M., Kalina, P., Wlachowska, B., Jakubovsky, J.: Dense particles in pons cerebrum in Behcet disease. Physical-chemical analysis of dense particles. In: 42nd Congress of Slovak Anatomical Soc. with International Participation, 28. 6 – 1.7. 2004, Košice, Zborník s. 46, ISBN 80-7097-554-7. (Pr)
- [24] Kopáni M., Kobayashi H., Mikula M., Takahashi M., Pinčík E.: FTIR spectroscopy of p-type a-Si:C: layers. In: 3rd aSiNet Workshop on THIN SILICON, SAV Bratislava, 25.-27.2. 2004, zborník s. 35. (Po).
- [25] Kopáni M.*, Rychlý B., Polák Š., Mikula M., Jorik V., Krištín J., Jakubovský J., Kalina P.: Physical and chemical analysis of denzity particles in central neural system – Behcet syndrom. In: 12. kongres Slovenskej a Českej spoločnosti patológov s medzinárodnou účasťou. 8.-10. sept. 2004, LFUK Bratislava, zborník s. 23. (Pr)

Contracts

- [1] Čeppan, M.: Training "Graphic Arts Basics". ZoD 6/2004. Podľa priloženého zoznamu účastníkov kurzu. (2004).
- [2] Panák, J.: Graphic Arts Service for the journal „Fibers and Textile“ No. 4/2003. ZoD 22/2004. Slovenská spoločnosť priemyselnej chémie, pobočka pri FCHPT STU Bratislava. (2004).
- [3] Panák, P.: Graphic Arts Service for the journal „Fibers and Textile“ No. 4/2003. ZoD 90/2004. Občianske združenie Spolok Proglas. (2004).

- [4] Panák, P.: Graphic Arts Service for the journal „Fibers and Textilel“ No. 4/2003. ZoD 92/2004. Slovenská spoločnosť priemyselnej chémie, pobočka pri FCHPT STU Bratislava. (2004).

Grants

- [1] Bakoš, D., Katuščák, S., Reháková, M., Vizárová, K. a kol.: Preservation, stabilization and conservation of traditional information substrates in the Slovak republic. Grant. Úloha VaV 661/2003 (kód 533).
- [2] Čeppan, M., Reháková, M., Katuščák, S., Vizárová, K.: The deterioration of historical manuscripts and documents related to transitional elements in writing inks. Grant APVT-20-034202 (kód FCHPT 710).
- [3] Čeppan, M.: MIP - Transition metals in paper. Grant. 5 RP EU EWVK4-2002-20010 (kód FCHPT 160).
- [4] Čeppan, M.: Properties of materials, constituents and structures of printed images on polymeric substrates. Grant VEGA 1/9145/02 (kód FCHPT 923).
- [5] Gigac, J., Panák, J., Čeppan, M., Dvonka, V.: The influence of fiber net and fiber properties on transfer and qualitative paper parameters. Grant APVT-26-038602
- [6] Mikula, M.: HIPROLOCO - High productivity and low cost for the encapsulation of thin film solar cells. Grant. 5 RP EU ENK5-CT-2000-00325 (kód FCHPT 161).
- [7] Mikula, M.: Preparation and modifications of thin surface layers properties of image-generating structures and their substrates. Grant. VEGA 1/9146/02 (kód FCHPT 993).

DEPARTMENT OF INFORMATION ENGINEERING AND PROCESS CONTROL

Head of Department:
Dr. Miroslav Fikar, PhD

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I. STAFF

Full Professors:

Ján Mikleš, PhD, DSc;

Associate Professors:

Monika Bakošová, PhD; Ján Danko, PhD; Ján Dvoran, PhD; Miroslav Fikar, PhD; Alojz Mészáros, PhD;

Assistant Professors :

Ľuboš Čirka, PhD; František Jelenčiak; Mária Karšaiová, PhD; Magdaléna Ondrovičová; Anna Vasičkaninová;

PhD Students:

Karol Calík; Lukáš Dermíšek; Tomáš Hirmajer; Dalibor Puna; Ľubomír Šperka; Juraj Vöröš;

Technical staff:

Eva Fuseková; Andrea Kalmárová; Stanislav Vagač;

II. TEACHING AND RESEARCH LABORATORIES

A. Teaching laboratories:

Laboratory of Process Control
Laboratory of Control Systems
Laboratory of Measuring Instruments and Techniques
Computer Laboratory (PC - Windows, Linux)
Computer Laboratory (Solaris)

B. Research laboratories:

Laboratory of Control Theory
Laboratory of Modelling and Simulation
Laboratory of Identification
Laboratory of Optimisation
Laboratory of Neural Networks
Laboratory of Fuzzy Control and Expert Systems
Laboratory of Chemical Reactor Analysis and Control
Laboratory of Biochemical Process Analysis and Control
Laboratory of Distillation Column Analysis and Control
Laboratory of Computer Aided Design (Siemens – SIMATIC S-7 300, FOXBORO)

III. TEACHING

A. Undergraduate Study:

1. semester (Bc)	Informatics	1/0/2	Šperka, Vasičkaninová
1. semester (Bc)	Computer Based Data Processing	0/0/2	Calík, Dermíšek, Hirmajer, Karšaiová, Ondrovičová, Puna, Vasičkaninová
1. semester (Bc)	Automatic Control Fundamentals	2/0/0	Bakošová, Fikar
	Laboratory Exercises of Automatic Control Fundamentals	0/0/2	Bakošová, Calík, Danko, Dermíšek, Fikar, Hirmajer, Jelenčiak, Karšaiová , Ondrovičová, Vasičkaninová

	Bachelor projects	0/0/4	Bakošová, Čirka, Danko, Fikar, Mikleš, Ondrovičová, Vasičkaninová
1. semester (Bc)	Process Control	1/0/2	Mészáros
	Process Dynamics	2/0/0	Bakošová
	Operating Systems	1/0/1	Fikar
	Control Devices and Systems	2/0/1	Danko
	Computer Programs	1/0/2	Čirka
	Laboratory Projects	0/0/8	Bakošová, Čirka, Fikar, Karšaiová
1. semester (Bc)	Optimisation	2/0/1	Dvoran
	Control Theory I	2/0/2	Čirka, Mikleš
	Laboratory Exercises of Control Theory I	0/0/2	Čirka, Mikleš
	Experimental Identification	2/0/0	Fikar
	Laboratory Project II	0/0/6	Čirka, Danko, Dvoran, Mikleš, Ondrovičová
	Modelling and Control of Polymerisation Processes	2/0/2	Dvoran
	Process Dynamics	2/0/0	Bakošová
	Laboratory Exercises of Process Dynamics	0/0/1	Bakošová
1. semester (Bc)	Control Theory II	2/0/0	Mészáros
	Laboratory Exercises of Control Theory II	0/0/2	Mészáros
	Intelligent Control Systems	2/0/0	Dvoran
	Semestral Project	0/0/1 0	Čirka, Dvoran, Karšaiová, Mikleš, Ondrovičová
	CAD systems	2/0/0	Karšaiová
	Industrial Applications of Process Control	2/0/0	Mikleš, Ondrovičová
	Control of Technological Processes	1/0/2	Bakošová, Vasičkaninová
1. semester (Bc)	Diploma Theses	0/0/2 7	Bakošová, Čirka, Danko, Fikar, Mikleš

IV. CURRENT RESEARCH PROJECTS

VEGA Project No 1/1046/04 Progressive methods of adaptive and intelligent control applied to processes of chemical/biochemical technologies (Alojz Mészáros)

The scientific project is focused on development of new strategies of adaptive, robust and intelligent control with respect to potential applications to the processes of chemical/biochemical technologies. The main goal is to make further progress in the field of adaptive lambda-tracking and artificial neural network (ANN) based identification and control. For effective ANN training a new approach is proposed: the hybrid modelling method. New adaptive and robust control structures are designed and tested by both, computer simulations and laboratory control experiments. An original, inverse plant model based robust neural controller is introduced through bias neuron weights adaptation as well as neuro-fuzzy system utilization. An integrating factor of project objectives is application of results to non-linear chemical processes through simulation experiments as well as laboratory scale implementation. As reference processes chemical reactor, biochemical reactor, fixed-bed tube reactor and distillation column are chosen. Results achieved will be offered for industrial application in collaboration with external partners.

Project duration: from 01.01.2004 to 31.12.2006

VEGA Project No 1/0135/03 Development of optimal and supervisory control methods for mass transfer processes (Miroslav Fikar)

The project deals with development of modern control methods and focuses into mass transfer processes: chemical reactors, distillation columns, waste-water treatment plants, and other processes of chemical and food technologies. Involves static and dynamic methods, two level control where supervision and dynamic optimisation will be investigated at the higher level and feedback control at the lower level. Developed algorithms, controllers, and control structures will be tested by simulations and in laboratory conditions.

Project duration: from 01.01.2003 to 31.12.2005

Project of Slovak – Czech Scientific Cooperation No 041 Advanced control methods for processes of chemical and food technologies (Ján Mikleš)

The aim of the project is to develop new methods of adaptive, robust and intelligent control and to implement obtained control algorithms for processes of chemical and food technologies.

Project duration: from 01.01.2004 to 31.12.2005

Project of Norwegian – Slovak Scientific Cooperation No 2032040 Norwegian competencies transfer into new curricula of environmental engineering education at the Slovak University of Technology in Bratislava (Alojz Mészáros)

The aim of the project is to transfer Norwegian competencies into new curricula of environmental engineering education at the Slovak University of Technology in Bratislava.

Project duration: from 01.01.2004 to 31.12.2005

Project of Slovak – French Scientific Cooperation Štefánik No 07921RE Dynamic and global process optimisation (Miroslav Fikar)

The aim of the project is to investigate and develop new methods of dynamic and global process optimisation.

Project duration: from 01.01.2004 to 31.12.2005

V. CURRENT EDUCATION PROJECTS

SOCRATES No 2004/5 (Miroslav Fikar)

The aim of the project is to develop a MATLAB package for dynamic optimisation based on orthogonal collocation on finite elements.

Project duration: from 01.10.2004 to 01.3.2005

VI. COOPERATION

A. Cooperation in Slovakia

Institution	Type of cooperation	Responsible person	Duration
ProCS, Ltd., Šaľa	Processing of graphical displays for RS Centum CS 3000.	Bartošovič Štefan, director, Dolná 16, Šaľa	01.10.2003 -
Department of Automation and Control, FEEIT STU, Bratislava	Education in information technologies and automatic control.	Huba Mikuláš, associate professor, Ilkovičova 3, Bratislava	01.06.2004 -
Department of Automation and Measurement, FME STU, Bratislava	Education in information technologies and automatic control.	Rohal-Ilkiv Boris, professor, Nám. Slobody 17, Bratislava	01.06.2004 -
Siemens, Inc., Bratislava	Industrial control systems.	Pätoprstý Radomír, Siemens, Bratislava	01.01.2001 -

B. International Cooperation

Institution	Type of cooperation	Responsible person	Duration
Department of Process Control and Computer Techniques, FCT, University of Pardubice, Czech Republic	Advanced control methods for processes of chemical and food technologies.	Tauer Ivan, professor, Nám. Čs. legií 565, Pardubice, Czech Republic	01.01.2000 -
LSGC-CNRS, Ecole Nationale Supérieure des Industries Chimiques (ENSIC), Nancy, France	Dynamic optimisation of distillation columns, wastewater treatment plants.	Latifi Mohamed Abderrazak, professor, 1 rue Grandville, Nancy, France	01.01.1997 -

Institution	Type of cooperation	Responsible person	Duration
Control Engineering Laboratory, FEIS, Ruhr University, Bochum, Germany	Closed-loop identification, predictive control.	Unbehauen Heinz, professor, Universitätstr. 150, Bochum, Germany	01.01.1998 -
Control Engineering Laboratory, FEIS, Ruhr University, Bochum, Germany	E-learning in control.	Schmid Christian, professor, Universitätstr. 150, Bochum, Germany	01.01.2003 -
Institute of Information Technologies, Tomas Bata University, Zlín, Czech Republic	Adaptive control, decentralized control.	Dostál Petr, professor, Nám. T. G. Masaryka 275, Zlín, Czech Republic	01.01.1998 -
Institute of Information Technologies, Tomas Bata University, Zlín, Czech Republic	Adaptive control, robust control.	Prokop Roman, professor, Nám. T. G. Masaryka 275, Zlín, Czech Republic	01.01.1998 -
Department of Chemical Engineering, TU Budapest, Hungary	Modelling of chemical processes,	Mizsey Peter, professor, Műlgetem rkp. 3, Budapest, Hungary	01.01.1996 -
Faculty of Electrical Engineering, Czech Technical University, Prague, Czech Republic	Adaptive control, polynomial synthesis.	Šebek Michael, Technická 2, Prague, Czech Republic	01.01.1998 -

C. Membership in Domestic Organizations and Societies

Name	Organisation or Society	Position	Valid date
Bakošová Monika	Slovak Society of Chemical Engineering	member	03.05.1995 -
Dvoran Ján	Slovak Society of Chemical Engineering	member	03.05.1995 -
Mészáros Alojz	Slovak Society of Chemical Engineering	member	03.05.1995 -
Mikleš Ján	Slovak Society of Chemical Engineering	member	03.05.1995 -
Dvoran Ján	Slovak Society for Cybernetics and Informatics	member	01.01.1992 -
Mikleš Ján	Slovak Society for Cybernetics and Informatics	member	01.01.1992 -
Mészáros Alojz	Slovak Society for Cybernetics and Informatics	member	01.01.1992 -
Bakošová Monika	Slovak Society of Industrial Chemistry	member	01.01.1983 -
Čírka Ľuboš	Slovak Society of Industrial Chemistry	member	01.01.1998 -
Danko Ján	Slovak Society of Industrial Chemistry	member	01.01.1975 -
Dvoran Ján	Slovak Society of Industrial Chemistry	member	01.01.1975 -
Fikar Miroslav	Slovak Society of Industrial Chemistry	member	01.01.1990 -
Karšaiová Mária	Slovak Society of Industrial Chemistry	member	01.01.1975 -
Mészáros Alojz	Slovak Society of Industrial Chemistry	member	01.01.1981 -
Mikleš Ján	Slovak Society of Industrial Chemistry	member	01.01.1975 -
Ondrovičová Magdaléna	Slovak Society of Industrial Chemistry	member	01.01.1991 -
Vasičkaninová Anna	Slovak Society of Industrial Chemistry	member	01.01.1985 -
Jelenčíak František	Slovak Society of Industrial Chemistry	member	01.01.2000 -
Dermíšek Lukáš	Slovak Society of Industrial Chemistry	member	01.01.2003 -
Šperka Ľubomír	Slovak Society of Industrial Chemistry	member	01.01.2003 -
Bakošová Monika	Czech Society of Chemical Engineering	member	01.01.2000 -
Mészáros Alojz	Czech Society of Chemical Engineering	member	01.01.2000 -
Mészáros Alojz	The New York Academy of Sciences	member	01.01.1996 -
Mészáros Alojz	Public Board of the Hungarian Academy of Sciences	member	01.01.2004 -
Mészáros Alojz	European Federation of Biotechnology	member	01.01.1997 -
Mikleš Ján	Scientific Grant Agency VEGA MŠSR a SAV - Commission for Elektrotechnics and Informatics	member	30.04.2002 -
Mikleš Ján	Commission for defence of dissertations (DSc) at science 28-30-9 Chemical Engineering and Process Control	member	01.11.1998 -
Mikleš Ján	Commission for defence of dissertations (DSc) at science 38-01-9 Automation and Control	chairmann	01.01.1998 -
Mikleš Ján	Common branch commission for PhD study at science 28-30-9 Chemical Engineering and Process Control	vice-chairman	01.01.1998 -
Bakošová Monika	Common branch commission for PhD study at science 28-30-9 Chemical Engineering and Process Control	member	02.12.2003 -
Danko Ján	Common branch commission for PhD study at science 28-30-9 Chemical Engineering and Process Control	member	01.01.1998 -

Name	Organisation or Society	Position	Valid date
Dvoran Ján	Common branch commission for PhD study at science 28-30-9 Chemical Engineering and Process Control	member	01.01.1998 -
Fikar Miroslav	Common branch commission for PhD study at science 28-30-9 Chemical Engineering and Process Control	member	02.12.2003 -
Mészáros Alojz	Common branch commission for PhD study at science 28-30-9 Chemical Engineering and Process Control	member	01.01.1998 -
Mikleš Ján	Common branch commission for PhD study at science 38-01-9 Automation and Control	member	09.09.1997 -
Mikleš Ján	Editorial board of AT&P Journal	member	01.01.1993 -
Dvoran Ján	Editorial board of AT&P Journal	member	01.01.1993 -
Mészáros Alojz	Editorial board of AT&P Journal	member	01.01.1993 -
Mikleš Ján	Editorial board of Cybernetics and Informatics	member	01.01.1993 -

D. Membership in International Organisations and Societies

Name	Organisation or Society	Position	Valid date
Mikleš Ján	International Federation of Automatic Control, Technical Committee on Control Design	member	01.01.1996 -
Mikleš Ján	International Federation of Automatic Control (IFAC), Slovak National Member Organisation (Slovak NMO)	other	01.01.1997 -

E. Visitors from abroad

Name	Organisation or Institution	State	Date / Duration
Lesage, F.	LSGC-CNRS, Ecole Nationale Supérieure des Industries Chimiques (ENSIC), Nancy	France	October 2004 (8 days)
Taufer, I.	Faculty of Chemical Technology, University of Pardubice, Pardubice	Czech Republic	December 2004 (4 days)
Havlíček, L.	Faculty of Chemical Technology, University of Pardubice, Pardubice	Czech Republic	December 2004 (2 days)
Javůrek, M.	Faculty of Chemical Technology, University of Pardubice, Pardubice	Czech Republic	December 2004 (2 days)

F. Visits of Staff Members and Postgraduate Students in Foreign Institutions

Name	Organisation / Institution / Conference	State	Date / Duration
Dvoran, J.	Faculty of Chemical Technology, University of Pardubice, Pardubice	Czech Republic	February 2004 (1 day)
Fikar, M.	9th International Conference on Computer Applications in Biotechnology	France	March 2004 (7 days)
Mikleš, J.	International Federation of Automatic Control, Vienna	Austria	April 2004 (1 day)
Bakošová, M.	Institute of Information Technologies, Tomas Bata University, Zlín	Czech Republic	April 2004 (1 day)
Čirka, L.	6th International Scientific-Technical Conference Process Control 2004, Kouty nad Desnou	Czech Republic	June 2004 (4 days)
Dvoran, J.	6th International Scientific-Technical Conference Process Control 2004, Kouty nad Desnou	Czech Republic	June 2004 (4 days)
Fikar, M.	6th International Scientific-Technical Conference Process Control 2004, Kouty nad Desnou	Czech Republic	June 2004 (4 days)
Mészáros, A.	6th International Scientific-Technical Conference Process Control 2004, Kouty nad Desnou	Czech Republic	June 2004 (4 days)
Mikleš, J.	6th International Scientific-Technical Conference Process Control 2004, Kouty nad Desnou	Czech Republic	June 2004 (4 days)
Šperka, L.	6th International Scientific-Technical Conference Process Control 2004, Kouty nad Desnou	Czech Republic	June 2004 (4 days)
Hirmajer, T.	6th International Scientific-Technical Conference Process Control 2004, Kouty nad Desnou	Czech Republic	June 2004 (4 days)

Name	Organisation / Institution / Conference	State	Date / Duration
Ondrovičová, M.	6th International Scientific-Technical Conference Process Control 2004, Kouty nad Desnou	Czech Republic	June 2004 (4 days)
Bakošová, M.	16th International Congress CHISA 2004, Prague	Czech Republic	August 2004 (6 days)
Fikar, M.	University of Stuttgart, Stuttgart	Germany	August - September 2004 (26 days)
Mészáros, A.	Technical University, Budapest	Hungary	September 2004 (2 days)
Fikar, M.	Faculty of Electrical Engineering, Czech Technical University, Prague	Czech Republic	September 2004 (2 days)
Mészáros, A.	University of Porto, Porto	Portugal	October 2004 (4 days)
Mészáros, A.	Technical University, Budapest	Hungary	November 2004 (2 days)
Fikar, M.	LSGC-CNRS, Ecole Nationale Supérieure des Industries Chimiques (ENSIC), Nancy	France	November - December 2004 (8 days)
Mészáros, A.	Institute of Chemical Technology, Prague	Czech Republic	December 2004 (1 day)
Mészáros, A.	Technical University, Budapest	Hungary	December 2004 (2 days)

VII. THESES AND DISSERTATIONS

A. Graduate Theses (Bc Degree) for state examinations after three years of study

Name	Title of Thesis	Supervisor
Halas, M.	PID controller tuning for setpoint response of a neutralisation process.	Mikleš, J.
Herceg, M.	Control of a fan heater.	Fikar, M.
Starigazda, P.	PID controller tuning for load disturbance response of a neutralisation process.	Mikleš, J.
Uhnava, X.	Control of a system of tanks for liquid storage.	Danko, J.
Vaneková, K.	Industrial control system SIMATIC.	Ondrovičová, M.
Pardupa, R.	Data verification in the e-learning module Laboratory exercises of automatic control fundamentals.	Čírka, L.
Petruš, P.	Industrial control system GENIE.	Ondrovičová, M.
Szucsová, A.	Controller design for a plate distillation column.	Bakošová, M.
Zábojníková, K.	Web page design for the course Process Dynamics	Bakošová, M.

B. Graduate Theses (MS Degree) for state examinations after five years of study

Name	Title of Thesis	Supervisor
Blach, P.	Software design for control of tanks for gas storage by control computer SIEMENS	Danko, J.
Gomboš, D.	Robust control of a continuous-time stirred tank reactor.	Bakošová, M.
Krajmer, M.	Mathematical model of a chemical reactor and nonlinear state estimation.	Mikleš, J.
Lipničanová, T.	Animations in process control using MATLAB.	Fikar, M.
Lehocký, M.	Design of an information system for publications.	Čírka, L.
Puna, D.	Design of an information system for Department of Process Control and Information Engineering.	Čírka, L.
Vöröš, J.	Intelligent control using PLC Simatic S7 with MATLAB support.	Mikleš, J.

VIII. PUBLICATIONS

Books, Chapters in monographs

- [1] Mikleš, J., Fikar, M.: Process modelling, identification and control II. Vydavateľstvo STU, Bratislava. 260 s. (2004). ISBN 80-227-2134-4.
- [2] Mikleš, J., Fikar, M.: Process modelling, identification and control 2. Identification and Optimal Control. STU Press, Bratislava. 260 s. (2004). ISBN 80-227-2132-8.
- [3] Muntean, O., Bálaš, V., Mészáros, A.: Biochemical Technology. Printech, Bucharest. 252s. (2003). ISBN 973-652-899-5.
- [4] Mikleš, J.: Automation and control in process industries. In: Encyclopedia of Life Support Systems (EOLSS), Part 6.43: Control Systems, Robotics and Automation (Editors: N. G. Basov and others), EOLSS Publishers, Oxford, 29 s. (2004).

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- [1] Andrášik, A., Mészáros, A., de Azevedo, S.: On-line tuning of neural PID controller using hybrid plant model. *Comp. Chem. Engng.* 28, 1499-1509 (2004).
- [2] Mészáros, A., Andrášik, A., Mizsey, P., Fonyó, Z., Illeová, V.: Computer control of pH and DO in a laboratory fermenter using a neural network technique. *Bioprocess Biosyst. Eng.* 26, 331-340 (2004).
- [3] Danko, J., Ondrovičová, M., Veselý, V.: Robust controller design to control of warm air-drying chamber. *Journal of Electrical Engineering* 55 (7-8), 207-211 (2004).
- [4] Dostál, P., Bakošová, M., Bobál, V.: An approach to adaptive control of a CSTR. *Chemical Papers* 58 (3), 184-190 (2004).

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- [1] Danko, J., Ondrovičová, M., Veselý, V.: Robust controller design to control of warm air-drying chamber. *Journal of Electrical Engineering* 55 (7-8), 207-211 (2004).

Other publications

- [1] Bakošová, M., Kostendová, M., Karšaiová, M., Ondrovičová, M.: Adaptive lambda-tracking of a laboratory fan heater. *Selected Topics in Modelling and Control* 4, 142-147 (2004).
- [2] Fikar, M., Chachuat, B., Latifi, M. A.: Dynamic optimisation of the aeration time in a small-size alternating activated sludge process. *Selected Topics in Modelling and Control* 4, 136-141 (2004).
- [3] Fikar, M., Unbehauen, H., Mikleš, J.: Design of a predictive controller based on pole-placement. *Selected Topics in Modelling and Control* 4, 131-135 (2004).
- [4] Mészáros, A., Andrášik, A., Šperka, L.: New approaches to neural control. *Selected Topics in Modelling and Control* 4, 172-180 (2004).
- [5] Mikleš, J., Čírka, L., Fikar, M.: Self-tuning LQ control of a chemical reactor. *Selected Topics in Modelling and Control* 4, 125-130 (2004).
- [6] Ondrovičová, M., Bakošová, M., Čáran, M., Karšaiová, M.: Control of a distillation column using control system SIMATIC S7-300. *AT&P Journal* 11 (1), 44-45 (2004).

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- [1] Bakošová, M.*, Vasičkaninová, A., Karšaiová, M., Ondrovičová, M.: PID controller tuning for cascade control of a chemical reactor. In: *Proc. 6. International Scientific-Technical Conf. Process Control 2004*. Kouty nad Desnou (Czech Republic), June 8-11, 2004. University of Pardubice, CD ROM R119 (2004). ISBN 80-7194-662-1. (Po)
- [2] Bakošová, M., Mészáros, A.*, Kostendová, M.: Control of a laboratory fan heater by an adaptive lambda-tracker. In: *Proc. 31. Int. Conf. SSCHE. Tatranské Matliare (Slovakia)*, May 24-28, 2004. SSCHE Bratislava, CD ROM 120 (2004), ISBN 80-227-2052-6. (Po)
- [3] Calík, K.*, Stopka, J., Fikar, M., Hirmajer, T.: Modelling of heavy gas leakages to the air. In: *Proc. 31. Int. Conf. SSCHE. Tatranské Matliare (Slovakia)*, May 24-28, 2004. SSCHE Bratislava, CD ROM 149 (2004), ISBN 80-227-2052-6. (Po)
- [4] Danko, J., Veselý, V., Ondrovičová, M.*: Robust controller design by small gain theory. In: *Proc. 6. International Scientific-Technical Conf. Process Control 2004*. Kouty nad Desnou (Czech Republic), June 8-11, 2004. University of Pardubice, CD ROM R256 (2004). ISBN 80-7194-662-1. (Po)
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- [25] Szanyi, Á.*, Benkő, T., Koczka, K., Mizsey, P., Mészáros, A., Borus, A., Fonyó, Zs.: Separation of highly non-ideal mixtures with extractive heterogeneous azeotropic distillation. In: Műszaki Kémiai Napok. Veszprém (Hungary), April 20-22, 2004. Műszaki Kémiai Kutatóintézet Veszprém, 246-247 (2004). ISBN 963-9495-37-9. (Pr)
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Contracts

- [1] Fikar, M.: Processing of graphical displays for RS Centum CS 3000. ZoD 144-1/2003, ProCS s r.o., Šaľa (2003).

Grants

- [1] Fikar, M.: Dynamic and global process optimisation. Grant. Projekt v rámci bilaterálnej slovensko-francúzskej spolupráce Štefánik č. 07921RE.
- [2] Fikar, M.: Development of optimal and supervisory control methods for mass transfer processes. Projekt VEGA MŠ SR a SAV č. 1/0135/03.
- [3] Mészáros, A.: Norwegian competencies transfer into new curricula of environmental engineering education at the Slovak University of Technology in Bratislava. Grant. Projekt v rámci bilaterálnej nórsko-slovenskej spolupráce č. 2032040.
- [4] Mészáros, A.: Progressive methods of adaptive and intelligent control applied to processes of chemical/biochemical technologies. Grant. VEGA MŠ SR a SAV č. 1/1046/04.
- [5] Mikleš, J.: Advanced control methods for processes of chemical and food technologies. Grant. Projekt v rámci slovensko-českej medzivládnej dohody o vedecko-technickej spolupráci č. 041.

DEPARTMENT OF INORGANIC CHEMISTRY

Head of Department:

Prof. Milan Melník, PhD, DSc
Prof. Marian Koman, PhD, DSc (since 1.10.2004)

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I. STAFF

Full Professors:

Roman Boča, PhD, DSc; Marian Koman, PhD, DSc; Milan Melník, PhD, DSc; Gregor Ondrejovič, PhD, DSc; Jozef Šima, PhD, DSc;

Associate Professors:

Michal Dunaj-Jurčo, PhD; Adela Kotočová, PhD; Anna Mašlejová, PhD; Iveta Ondrejkočová, PhD; Peter Segľa, PhD; Dušan Valigura, PhD;

Assistant Professors :

Mário Izakovič, PhD; Vladimír Jorík, PhD; Ľubov Macášková, PhD; Blažena Papánková, PhD; Anton Sirota, PhD; Miroslav Tatarko, PhD;

Research Fellows:

Ľubor Dlháň, PhD; Dušan Mikloš, PhD; Milan Ružička;

PhD Students:

Radovan Herchel (since 1.10.2002); Radoslava Ivaniková (since 1.10.2003); Jana Jašková (since 1.10.2003); Jaroslava Macková (since 1.10.2004); Michaela Miháliková (since 1.10.2004); Petra Stachová (since 1.10.2002); Katarína Šintalová (since 1.10.2003); Jozef Švorec (since 1.10.2001); Ján Titiš (since 1.10.2004);

Technical Staff:

Andrea Bočová; Marta Danková; Valéria Habudová; Leonard Kováč; Helena Križanová; Silvia Markusová; Marta Polláková; Marta Sprušanská;

II. TEACHING AND RESEARCH LABORATORIES

A. Teaching Laboratories:

Laboratories of Practical Exercises

B. Research Laboratories:

Laboratory of Electrochemistry
Laboratory of Photochemistry
Laboratory of Magnetochemistry
Laboratory of Thermal Processing
Laboratory of Spectroscopy
Laboratory of X-ray Analysis
Laboratory of Powder Diffraction

III. TEACHING

A. Undergraduate Study:

1. semester (Bc)	Inorganic Chemistry I	3/2/0	Boča, Šima, Kotočová, Ondrejkočová, Valigura
	Inorganic Chemistry I (Laboratory)	0/0/3	
1. semester (Bc)	Inorganic Chemistry II	2/2/0	Melník, Ondrejovič, Koman, Segľa
	Inorganic Chemistry II (Laboratory)	0/0/4	
1. semester (Bc)	Chemical Bond and Chemical Structure	2/0/0	Boča
	Chemistry of Coordination and Organometallic Compounds	2/0/0	Ondrejovič
	Inorganic Syntheses	2/0/0	Valigura
	Inorganic Photochemistry	2/0/0	Šima
1. semester (Bc)	Laboratory Practice in the Major I	0/0/1 0	Boča, Kotočová, Ondrejkočová, Ondrejovič, Ružička

	Laboratory Practice in the Major I	0/0/1 0	Segľa, Valigura
1. semester (Bc)	Indirect Methods of Research of Inorganic Compounds	2/2/0	Mašlejová
	Crystallochemistry	2/0/0	Mikloš
	Laboratory Practice in the Major II	0/0/6	Jorík, Mašlejová, Mikloš
	Spectral Methods of Control Technological Processes	2/2/0	Segľa
1. semester (Bc)	Reaction mechanisms of Inorganic Compounds	2/0/0	Šima
1. semester (Bc)	Inorganic Materials	2/1/0	Koman
	Bioinorganic Chemistry	2/1/0	Melník
	Laboratory of Speciality	0/0/1 0	
1. semester (Bc)	Inorganic Biopharmacs	2/0/0	Melník
	Catalysis	2/0/0	Ondrejčovičová
	Engineering of Inorganic Substances	2/0/0	Ondrejovič
1. semester (Bc)	Diploma Thesis	0/0/2 7	supervisors

IV. CURRENT RESEARCH PROJECTS

VEGA Project No 1/9252/02 Magnetoactive Coordination Compounds (Roman Boča).

A rational design of the zero-field splitting parameter in metal complexes lies at the centre of focus. An extensive series of the Ni(II) complexes with a variable coordination sphere (unidentate, bidentate and polydentate ligands) has been synthesized and the recorded magnetic response (the temperature variation of the isothermal magnetic susceptibility and the field dependence of the magnetization) has been analyzed by the developed software. At this stage the sign and magnitude of the zero-field splitting parameter (the axial magnetic anisotropy parameter) can be predicted. New program that handles the complete space spanning by the crystal-field multiplets and Zeeman levels has been outlined. At present the project concentrates to the understanding of the magnetic anisotropy in binuclear complexes. See: Chem. Phys. Lett. 373 (2003) 402-410.

Project duration: from 01. 01. 2002 to 31. 12. 2004

DAAD Project No 6/2002 New Crystal, Molecular, Electronic and Magnetic Structures with Functional Properties (Roman Boča).

Molecule-based magnets containing Ni(II) and Co(II) centers have been synthesized and their magnetism was studied extensively by the contemporary battle of the magneto-chemical-physical hardware. See: Inorg. Chem. 42 (2003) 6965-6967.

Project duration: from 01. 01. 2003 to 31. 12. 2004

MVTS Project No NEM/Slov/DAAD/CH New Magnetic Materials (Roman Boča).

Spin crossover phenomenon was studied by six experimental techniques: magnetic susceptibility measurement, variable-temperature powder diffraction, variable-temperature EXAFS measurements, variable-temperature Moessbauer spectroscopy, variable-temperature infrared spectroscopy and the differential scanning calorimetry. New theoretical insight into the cooperativeness in the solid state has been proposed based upon the concept of the chemical hardness. See: Chem. Phys. 293 (2003) 375-395.

Project duration: from 01. 01. 2002 to 31. 12. 2004

MVTS Project No NEM/Slov/DFG/CH Molecular Electronic Multistability (Roman Boča).

Multinuclear coordination compounds of iron(III) with cyanide bridges were synthesized where several close-lying electronic states could be stabilized. The effect of the magnetic field to the induced stabilization is investigated. See: Solid State Phenom. 90 (2003) 147-152.

Project duration: from 01. 01. 2002 to 31. 12. 2007

APVT Project No 20-009902 Low-Dimensional Magnetic Materials (Roman Boča).

Molecular (0D) and chain (1D) coordination compounds were synthesized and their magnetic properties recorded and analyzed. See: Inorg. Chem. 42 (2003) 5801-5803.

Project duration: from 01. 08. 2002 to 31. 12. 2004

Grant No 1/9251/02 Preparation and study of novel non-steroid coordination antiflogistics and antituberculotics (Milan Melnik).

Synthesis of novel coordination compounds disposing properties of coordination chemotherapeutics which can be applied in human and veterinary medicine represents one of the most perspective fields of bioinorganic chemistry. The synthesis and study of novel nonsteroid coordination antiflogistics and antituberculotics are consistent with these properties. Thus, a search for new types of chemotherapeutics is a great challenge for bioinorganic chemistry. The biocomplexes of copper and iron with various ligands, namely with derivatives of nicotine, salicylic and propionic acids as well as with fenamates are the object of our study in connection with the search for coordination antiflogistics. The biocomplexes of copper and magnesium with other group of ligands, namely derivatives of 4-oxoquinolate are considered to have properties of the potential antituberculotics are also the object of our study. A specific theoretical and experimental procedure characterising the construction of coordination polymers was elaborated. Crystal structure determination of some copper and magnesium complexes contributed to the optimisation of favourable conditions for reactions of ligands forming new compounds in the coordination sphere. The basic factors influencing the relation between the wavelength of irradiation and the photoredox efficiency of iron complexes were formulated. It was found that by photolysis of copper complexes generated hydroxyl radical in solutions participates in photodegradation of some pollutants. The results can be applied to improve ecology.

Project duration: from 01. 01. 2002 to 31. 12. 2004

V. CURRENT EDUCATION PROJECTS

A. Project No 301/02 Picking out of talented students and their motivation in new conditions of social development with respect to the needs of the Faculty of Chemical and Food Technology of the Slovak Technical University (Anton Sirota).

A special questionnaire has been elaborated for research of students' motivation in their choice to study chemistry and their evaluation of the study organisation and the level at the Faculty of Natural Sciences Comenius University in Bratislava. The questionnaire has been applied to a sample students of the first course of the Faculty of Natural Sciences. Their responses have been evaluated and the results obtained have been compared with those obtained with a similar questionnaire in 2003 at the Faculty of Chemical and Food Technology. The results show that evaluation of students in 2003 and 2004 does not differ very much but they differ in many significant aspects from those obtained in the year 1984. It will probably be necessary to adapt the pedagogical process at both Faculties as well as methods how to gain students for study of chemistry to a new situation in the secondary schools education as well as in the social life. The members of the research team organised a special seminar for secondary school teachers in August 2004 with the aim to enhance the quality of chemistry teaching at the schools. Two members of the research team presented their lectures at the seminar. Two members of the research team are chairman and vice-chairman in the club Socrates at the Faculty of Chemical and Food Technology of the Slovak University of Technology. The club enhance such activities that are in favour of selected talented students of the Faculty. Some members of the research team were involved in a preparation of the national team - the best four secondary school pupils who attended the 36th International Chemistry Olympiad in Germany and were awarded with 1 gold, 1 silver and 1 bronze medal. The members of the research team published 15 papers in journals (in Slovak), presented three lectures at the conferences, and one of them is the authors of a book in which competition tasks are gathered which were set in the Chemistry Olympiad in the last ten years in the field of inorganic and analytical chemistry.

Project duration: from 01. 01. 2002 to 31. 12. 2004

VI. COOPERATION

A. Cooperation in Slovakia

Institution	Type of cooperation	Responsible person	Duration
Pharmaceutical Faculty, Comenius University, Bratislava	Synthesis and spectral properties of Schiff base with Cu(II) complexes	Valent Aladár, Assoc. professor, Kalinčiaková 8, 832 32 Bratislava	2002 -
Medical Faculty, Comenius University, Bratislava	Cu(II) Schiff-base complexes as perspective antidotes	Čársky Jozef, professor, Sasinkova 10, 813 72 Bratislava	2000 -

B. International Cooperation

Institution	Type of cooperation	Responsible person	Duration
Materials Science, University of Technology, Darmstadt, Germany	New Crystal, Molecular, Electronic and Magnetic Structures with Functional Properties	Fuess Hartmut, professor, Petersenstrasse 23, 64287 Darmstadt, Germany	1994 -
Institute of Inorganic Chemistry, Johannes-Guttenberg-University, Mainz, Germany	Molecular Electronic Multistability	Renz Franz, Dr., Staudinger Weg 9, D-55099 Mainz, Germany	2002 -
Institute of Applied Synthetic Chemistry, Vienna University of Technology, Vienna, Austria	Coordination Compounds with Interesting Magnetic Properties	Linert Wolfgang, professor, A-1060 Vienna, Austria	1998 -
Institute of Inorganic and Physical Chemistry, University of Technology, Darmstadt, Germany	New Crystal, Molecular, Electronic and Magnetic Structures with Functional Properties	Haase Wolfgang, professor, Petersenstrasse 23, 64287 Darmstadt, Germany	1994 -
Department of Chemistry, University of Puerto Rico, San Juan, USA	Magnetism of Multinuclear Coordination Compounds and Clusters	Raptis Raphael, professor, San Juan, PR 00931-3346, USA	1994 -
Institute of Solid State Chemistry, Faculty of Chemical Technology, Prague, Czech Republic	RTG analysis of monocrystals and powders	Kratochvíl Bohumil, professor, Technická 5, 16628 Prague 6, Czech Republic	2004 - 2005
York University, Toronto, Canada	X-ray analysis of transition and non-transition metal atoms	Holloway Clive Eduard, director, 4700 Keele Street, North York M3J 1P3, Toronto, Ontario, Canada	1976 -
University of Helsinki, Helsinki, Finland	X-ray analysis of solid compounds	Sundberg Markku, professor, A. I. Virtasen aukio 1, P.O. Box 55, Helsinki, Finland	1968 -
Department of Chemistry, University of Jyväskylä, Yyveskilää, Finland	X-ray analysis of solid compounds	Sillanpää Reijo, professor, FIN-40351 Jyväskylä, Finland	2003 -
Wroclaw University, Wroclaw, Poland	Magnetic properties of solid compounds	Mrozinski Jerzy, professor, 14, F. Joliot-Curie str, 50-383 Wroclaw, Poland	1972 -
Okayama University, Okayama, Japan	Synthesis and magnetic properties of solid compounds	Kojima Masaaki, professor, Tsushima, Okayama, 700-8530 Japan	2003 -
Aoyama Gakuin University, Tokyo Japan	Schiff bases and chemistry of copper complexes	Hasegawa Miki, professor, 6-16-1 Chitosedai Setagaya-ku, Tokyo, 157-8572 Japan	2003 -
Kwansei Gakuin University, Osaka, Japan	Magnetic and spectral properties solid compounds	Mikuriya Masahiro, professor, 2-1 Gakuen, Sanda 669-1337, Japan	2003 -
Ochanomizu University, Tokyo, Japan	PhD students exchange	Fukuda Yutaka, professor, Ochanomizu University, 2-1-1 Otsuka, Bunkyo-ku 112-8610, Tokyo, Japan	2003 -

C. Membership in Domestic Organizations and Societies

Name	Organisation or Society	Position	Valid date
Koman Marian	Slovak Expert Group of Solid State Chemistry and Physics	chairmann	01. 06. 1985 -
Koman Marian	Regional Committee of Czech and Slovak Crystallographers	vice-president	01. 01. 1992 -
Koman Marian	Czech and Slovak Association for Crystal Growth	member	01. 02. 1994 -
Koman Marian	Slovak Society for Industrial Chemistry	member	01. 01. 1985 -
Moncol' Ján	Czech & Slovak Crystallographic Association	member	01. 07. 2001 -
Ružička Milan	The Czechoslovak Association for Crystal Growth	vice-president	1991 -
Ružička Milan	Slovak Expert Group of Solid Chemistry and Physics	other	1975 -

D. Membership in International Organisations and Societies

Name	Organisation or Society	Position	Valid date
Koman Marian	Slovak Expert Group of Solid State Chemistry and Physics	chairmann	01. 06. 1985 -
Koman Marian	Regional Committee of Czech and Slovak Crystallographers	vice-president	01. 01. 1992 -
Koman Marian	Czech and Slovak Association for Crystal Growth	member	01. 02. 1994 -
Moncol' Ján	Czech & Slovak Crystallographic Association	member	01. 07. 2001 -
Ružička Milan	The Czechoslovak Association for Crystal Growth	vice-president	1991 -
Ružička Milan	Slovak Expert Group of Solid Chemistry and Physics	other	1975 -
Melník Milan	American Chemical Society	member	1998 -
Melník Milan	Finnish Chemical Society	member	1974 -
Melník Milan	Editorial board MGMC	member	1998 -
Izakovič Mário	European Photochemistry Association	member	01. 01. 1997
Tatarko Miroslav	European Photochemistry Association	member	01. 01. 1996

E. Visitors from abroad

Name	Organisation or Institution	State	Date / Duration
Grobelny, R.	Chemistry Institute, University of Wroclaw, Wroclaw	Poland	April 2004 (4 days)
Mrozinski, J.	Materials Science, Darmstadt University of Technology, Darmstadt	Poland	April 2004 (4 days)

F. Visits of Staff Members and Postgraduate Students in Foreign Institutions

Name	Organisation / Institution / Conference	State	Date / Duration
Boča, R.	DFG Bonn, Dürkheim	Germany	February 2004 (4 days)
Ružička, M.	Institute of Physics, Czech Academy of Sciences, Prague	Czech Republic	March 2004 (2 days)
Moncol', J.	State University of New York, Buffalo	USA	May 2004 (180 days)
Ivaniková, R.	Institute of Material Research, Technical University, Darmstadt	Germany	July 2004 (14 days)
Mašlejová, A.	Institute of Material Research, Technical University, Darmstadt	Germany	July 2004 (10 days)
Papánková, B.	Institute of Material Research, Technical University, Darmstadt	Germany	July 2004 (9 days)
Boča, R.	Institute of Material Research, Technical University, Darmstadt	Germany	August 2004 (21 days)
Ivaniková, R.	Solid State Chemistry, Prague	Czech Republic	September 2004 (6 days)
Dlháň, L.	Development of Materials Science in Research and Education, Lednice	Czech Republic	September 2004 (3 days)
Koman, M.	Development of Materials Science in Research and Education, Lednice	Czech Republic	September 2004 (3 days)
Mikloš, D.	Development of Materials Science in Research and Education, Lednice	Czech Republic	September 2004 (3 days)
Papánková, B.	Development of Materials Science in Research and Education, Lednice	Czech Republic	September 2004 (3 days)
Ružička, M.	Development of Materials Science in Research and Education, Lednice	Czech Republic	September 2004 (3 days)

Name	Organisation / Institution / Conference	State	Date / Duration
Ivaniková, R.	56th Meeting of Chemical Societies, Ostrava	Czech Republic	September 2004 (4 days)
Izakovič, M.	56th Meeting of Chemical Societies, Ostrava	Czech Republic	September 2004 (4 days)
Jašková, J.	56th Meeting of Chemical Societies, Ostrava	Czech Republic	September 2004 (4 days)
Ondrejčovičová, I.	56th Meeting of Chemical Societies, Ostrava	Czech Republic	September 2004 (4 days)
Ondrejovič, G.	56th Meeting of Chemical Societies, Ostrava	Czech Republic	September 2004 (4 days)
Segľa, P.	56th Meeting of Chemical Societies, Ostrava	Czech Republic	September 2004 (4 days)
Šima, J.	56th Meeting of Chemical Societies, Ostrava	Czech Republic	September 2004 (4 days)
Švorec, J.	56th Meeting of Chemical Societies, Ostrava	Czech Republic	September 2004 (4 days)
Boča, R.	International Conference on Molecular Magnetism, Tsukuba	Japan	October 2004 (16 days)
Boča, R.	University lectures	Japan	October 2004 (5 days)

VII. THESES AND DISSERTATIONS

A. Graduate Theses (Bc Degree) for state examinations after three years of study

Name	Title of Thesis	Supervisor
Šalitraš, I.	Preparation and magnetic properties of nickel(II) complexes.	Boča, R.

B. Graduate Theses (MS Degree) for state examinations after five years of study

Name	Title of Thesis	Supervisor
Špacírová, J.	Preparation and properties of iron complexes with pyridine derivatives.	Ondrejčovičová, I.
Jurko, M.	Infrared and electron spectra of tetranuclear copper(II) complexes with 3- and 4-pyridylcarbinol.	Ondrejovič, G.
Takáčsová, J.	Electrochemical study of tetranuclear copper(II) complexes with 3-methylpyridine in nitromethane.	Kotočová, A.
Jevíková, J.	The study of dehydrogenation reactions of Ni(II) with heterocyclic ligands.	Koman, M.

C. Dissertations (PhD)

Múdra, M.	Preparation and study of the novel nonsteroid medical agents of copper.	Melník, M.
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VII. PUBLICATIONS

Books, Chapters in monographs

- [1] Sirota, A.: Inorganic and analytical chemistry in the tasks of chemistry olympiad Vydavateľstvo STU, Bratislava, 2004, 260 strán. ISBN 80-8072-021-5, EAN 9788080720216.
- [2] Valigura, D., Gracza, T., Mašlejová, A., Papánková, B., Šima, J., Špirková, K.: Chemical Tables. Vydavateľstvo STU, Bratislava, 2004, ISBN 80-227-2039-9.
- [3] Milata, V., Segľa, P.: Spectral methods in Chemistry STU Bratislava 2004, ISBN 80-227-2049-6.
- [4] Bakoš, D., Berkeš, D., Biskupič, S., Čertík, M., Dvoran, J., Izakovič, M., Kovařík, P., Mierka, O., Ondrejčovičová, I., Šajbidor, J.: Information technologies in education. In: Nové trendy v chémii. Vydavateľstvo STU, Bratislava, 17-22 (2004). ISBN 80-227-2026-0

CC publications

- [1] Boča, R., Boča, M., Gembický, M., Herchel, R., Jager, L., Wagner, C., Fuess, H.: Versatile coordination mode of dicyanamide in nickel (II) complexes containing polyamines as blocking ligands. Polyhedron 23, 2337-2348, (2004).

- [2] Boča, R.: Zero-field splitting in metal complexes. *Coord. Chem. Rev.* 248, 757 – 815, (2004).
- [3] Čík, G., Šeršeň, F., Dlháň, L.: Study of polaron interactions of regiorandom poly(3-dodecylthiophene) and their influence on magnetic properties. *Synth. Met.* 144, 55-60, (2004).
- [4] Herchel, R., Boča, R., Gembický, M., Kožíšek, J., Renz, F.: Spin Crossover in a Tetranuclear Cr(III)-Fe(III)₃ Complex. *Inorg. Chem.* 43, 4103-4105, (2004).
- [5] Izakovič, M., Šima, J., Brezová, V.: Photochemical behaviour of iron(III) oxalato complexes with N,N'-ethylenebis(benzoylacetoneiminato) Schiff base derivatives. *J. Photochem. Photobiol. A* 167, 81-86, (2004).
- [6] Izakovič, M., Šima, J.: Photoredox Chemistry of Iron(III) Oxalato Complexes with N,N'-1,1-R₂-ethylenebis(R'-salicylideneiminato) Ligands. *Acta Chim. Slov.* 51, 427-436, (2004).
- [7] Lorinc, S., Koman, M., Melnik, M., Moncol, J., Ondrusova, D.: Bis(flufenamato-kappa O)bis(3-pyridylmethanol-kappa N-2,O)copper (II). *Acta Crystallogr. E* 60, M590-M592, (2004).
- [8] Mašlejová, A., Boča, R., Dlháň, L., Herchel, R.: Magnetic anisotropy in nickel complexes as determined by combined magnetic susceptibility/magnetization/theoretical studies. *J. Magnetism Magnet. Mater.* 272–276, 380–381, (2004).
- [9] Mazúr, M., Moncol, J., Valko, M., Morris, H.: Analysis of the radial and longitudinal effects of a planar sample in a single TE₁₀₂ rectangular electron paramagnetic resonance (EPR) cavity. *Anal. Chim. Acta* 526, 163-176, (2004).
- [10] Moncol, J., Gembický, M., Coppens, P.: Dicarbonylbis(triphenylphosphine)nickel(0): a redetermination at 90 K. *Acta Crystallogr. E* 60, M1582-M1583, (2004).
- [11] Moncol, J., Kalinaková, B., Švorec, J., Kleinová, M., Koman, M., Hudecová, D., Melnik, M., Mazur, M., Valko, M.: Spectral properties and bio-activity of copper(II) clofibrates, part III: crystal structure of Cu(clofibrate)₂(4-pyridylmethanol)₂(H₂O) dihydrate and Cu₂(clofibrate)₄(N,N-diethylnicotinamide)₂. *Inorg. Chim. Acta* 357, 3211-3222, (2004).
- [12] Moncol, J., Mudra, M., Lonneck, P., Koman, M., Melnik, M.: Hydrogen-bonded coordination network in crystal structures of [Cu(3-PM)(4)Cl-2] and [Cu(4-PM)(4)Cl]Cl, (PM = pyridylmethanol). *J. Chem. Crystallogr.* 34, 423-431, (2004).
- [13] Moncol, J., Múdra, M., Lönncke, P., Koman, M., Melnik, M.: Copper(II) halogenopropionates: Low-temperature crystal and molecular structure of bis(2,2-dichloropropionato)-di(methyl-3-pyridylcarbamate)copper(II) and bis(2-bromopropionato)-di(2.pyridylmethanol)copper(II). *J. Coord. Chem.* 57, 1065-1078 (2004).
- [14] Segla, P., Mikloš, D., Olejníková, P., Kaliňáková, B. Hudecová, D., Palicová, M., Švorec, J., Valko, M., Melnik, M., Glowiak, T.: Copper(II) pyridinecarboxylate adducts with chelating ligands as potential antimicrobial agents. *Inorg. Chim. Acta* 357, 4172-4180 (2004).
- [15] Segla, P., Palicova, M., Miklos, D., Melnik, M., Korabik, M., Mrozinski, J., Glowiak, T., Sundberg, M., Lönncke, P.: Synthesis, Spectral and Magnetic Properties, and Crystal Structures of Copper(II) Pyridinecarboxylate Adducts with N-Heterocyclic Ligands. *Z. Anorg. Allg. Chem.* 630, 470-478, (2004).
- [16] Stachová, P., Valigura, D., Koman, M., Melnik, M., Korabik, M., Mrozinski, J., Glowiak, T.: Crystal structure, magnetic and spectral properties of tetrakis(2-nitrobenzoato)di(aqua)dicopper(II) dihydrate. *Polyhedron* 23, 1303-1308, (2004).
- [17] Šima, J., Horváthová, L., Izakovič, M.: Photoredox reactions occurring in methanolic solutions of iron(III) azido complexes with N,N'-ethylenebis(salicylaldiminato) Schiff Base derivatives. *Monatsh. Chem.* 135, 5-12, (2004).
- [18] Tomkiewicz, A., Boca, R., Nahorskaa, M., Mrozinski, J.: Ferrimagnetic, bimetallic chain systems: [Ni(tetren)]ReCl₆ and [Ni(tetren)]ReCl₆.CH₃OH where tetren = tetraethylenepentamine. *J. Mol. Struct.* 734, 143-148, (2004).
- [19] Valent, A., Kohútová, M., Švajlenová, O., Hudecová, D., Olejníková, , Melnik M.: N-salicylidene –L-glutamato-copper(II) complexes and their antimicrobial effects. *J. Coord. Chem.*, 57, 1279-1285, (2004).
- [20] Valigura, D., Melnik M., Koman, M., Martiška, L., Korabik, M., Mrozinski, J., Glowiak, T.: Structural confirmation of the 3,5-dinitrosalicylato anion coordination ability to metal ion: crystal structure, spectral and magnetic properties of the [Cu₃{3,5-(NO₂)₂sal₂-} ₂{3,5-(NO₂)₂sal₁-} ₂(H₂O)₄. 4H₂O. *Polyhedron* 23, 2447-2456, (2004).
- [21] Valigura, D., Melnik, M., Koman, M., Martiška, L., Korabik, M., Mrozinski, J., Glowiak, T.: The first structurally proved copper(II) complex simultaneously containing salicylato mono- and dianions. X-ray crystal structure, spectral and magnetic properties of the trimeric [Cu₃{3,5-(NO₂)₂sal₂-} ₂{3,5-(NO₂)₂sal₁-} ₂(H₂O)₄.4H₂O. *Inorg. Chem. Commun.* 7, 548-552, (2004).
- [22] Valko, M., Izakovič, M., Mazúr, M., Rhodes, Ch. J., Telsler, J.: Role of oxygen radicals in DNA damage and cancer incidence. *Mol. Cell. Biochem.* 266, 37-46, (2004).

Other publications

- [1] Súkeník, M., Šima, J.: Time as a Phase Space of Alternative Reality. *Spacetime and Substance* 5, 6-9, (2004).
- [2] Sirota, A.: Biologically active metals in the chemistry olympiad problems from inorganic chemistry (III) *Chemické rozhľady*, 1, 5-8, (2004), ISSN 1335 - 8391.
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DEPARTMENT OF INORGANIC TECHNOLOGY

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I. STAFF

Full Professors:
Prof. Pavel Fellner, PhD, DSc.

Associate Professors:
Jana Gabčová, PhD, Ján Híveš, PhD, Marta Chovancová, PhD, Ján Valtýni, PhD (till 31.8.2004)

Assistant Professors :
Anna Žúžiová, PhD.

Research Fellows:
Peter Adamčík, Marta Ambrová (since 1.10.2004), Vladimír Danielik, PhD, Vladimír Khandl, Matilda Zemanová, PhD.

PhD Students:
Marta Ambrová (till 30.9.2004), Michaela Benová, Zuzana Gáliková, Jana Jurišová, Michaela Nemčeková, Alexandra Sýkorová (since 1.10.2004), Dalibor Uher (since 1.10.2004)

Technical staff:
Daniela Dančová, František Kollár

II. TEACHING AND RESEARCH LABORATORIES

A. Teaching laboratories:

Molten Salt Chemistry Laboratories
Laboratories of Chemical Inorganic Syntheses and Industrial Inorganic Chemistry

B. Research laboratories:

Molten Salt Chemistry and Electrochemistry Laboratories
Technical Electrochemistry Laboratories
Electroplating, Special Coatings and Corrosion Laboratories

III. TEACHING

A. Undergraduate Study:

1. semester (Bc)	Fundamental Principles of Inorganic Technology	2/2/0	Gabčová, Híveš
1. semester (Bc)	Corrosion and Material Surface Treatment	2/0/2	Chovancová
1. semester (Bc)	Phase Equilibria	1/2/0	Gabčová
	Corrosion and Material Protection	2/1/0	Chovancová, Zemanová
	Applied Thermodynamics	2/2/0	Fellner, Danielik
	Laboratories I.	0/0/8	Gabčová, Híveš, Chovancová, Žúžiová
1. semester (Bc)	Chemical Reaction Engineering	2/2/0	Valtýni, Híveš
	Applied Electrochemistry	2/2/0	Híveš
	Laboratories II.	0/0/8	Gabčová, Híveš, Chovancová, Žúžiová
1. semester (Bc)	Fertilizers	2/0/0	Žúžiová, Gabčová
	Electrochemical Engineering	1/1/0	Híveš, Fellner
	Elements of System Engineering	1/1/0	Danielik
	Laboratories III.	0/0/10	Danielik, Fellner, Gabčová, Híveš, Chovancová,
1. semester (Bc)	Diploma work	0/0/27	Danielik, Fellner, Gabčová, Híveš, Chovancová, Valtýni,

IV. CURRENT RESEARCH PROJECTS

VEGA Project No 1/9425/02 Preparation and Properties of Composite and Alloy Layers on Metal Substrates (Marta Chovancová)

Composite material on the aluminium formed by the combination of the inorganic and organic materials increases the application ability of the aluminium (corrosion resistance, decorative properties). Corrosion resistance of anodized aluminium sealed by various methods was investigated by the method of impedance spectroscopy.

The combined two steps sealing method of anodic oxide coatings on aluminium has been designed. This sealing method is able to substitute classical hydrothermal sealing.

The preparation of electrochemical composite coatings with nickel matrix and Si dispersion particles has been studied and the influence of electrode position on the silicon content in the coatings has been tested.

The participation of solid Fe powder particles in the transfer of charge through the heterogeneous system consisting of an electrolyte and conducting powder particles was studied by means of electrochemical impedance spectroscopy.

The possibility of the electrodeposition and the corrosion resistance and mechanical properties of Ni/W alloy coatings deposited from the water solutions have been investigated. The corrosion resistance of alloy coatings was investigated after thermal treatment in argon atmosphere as well. The mass content of the alloy metals in the coating is possible to influence by the change of the pulse cycles parameters

Project duration: from January 2002 to December 2004

VEGA Project No 1/9426/02 Thermodynamics and kinetics of the chemical and electrochemical reactions in the electrolyte at the phase boundary aluminium- melt (Pavel Fellner)

New data on the phase diagram of the molten system Al – Na were obtained. Thermodynamics of the system liquid aluminium – liquid and/or gaseous sodium was discussed. On the basis of these results, the content of sodium in molten aluminium during the aluminium electrolysis both in the laboratory and industrial cells was explained.

Data on the relationship between the content of sodium in molten aluminium and the cathode overvoltage during aluminium electrolysis were acquired. Thermodynamic model describing the content of sodium in polarized aluminium has been developed.

Project duration: from January 2002 to December 2004

State Project E 02.02.01 Concept of twosteps transmutation (Pavel Fellner)

Investigation and critical analysis of phase equilibria and electrochemical properties of the lanthanide and actinide fluorides, electrodeposition of lanthanum.

Project duration: from October 2003 to December 2006

NATO / EST.CLG.979931 Environmentally Friendly Oxidant Iron(VI), Synthesis and Applications in Water Quality Security

Iron(VI) is one of the most powerful multi-purpose oxidizers known - stronger than chlorine, chlorine dioxide, hydrogen peroxide, and potassium permanganate. The proposed research will elucidate a better understanding of the synthesis and implementation technology of Fe(VI) to water treatment processes. The collaborative efforts of four research groups (USA, UK, HU, CZ, SK) will accomplish three main objectives:

- to understand the mechanisms of wet oxidation, dry oxidation, and electro-chemical oxidation processes to synthesize Fe(VI);

- to study variables of a suitable industrial synthetic technique for Fe(VI); and

- to know the role of Fe(VI) as an innovative treatment chemical in on-site decontamination of potential terrorism chemicals to the water supply.

Project duration: from September 2003 to September 2005

V. CURRENT EDUCATION PROJECTS

VI. COOPERATION

A. Cooperation in Slovakia

Institution	Type of cooperation	Responsible person	Duration
Phostec s.r.o., Žarnovica	Synthesis of polymorphic InP	Ing. Jozef Matuška, PhD.	14.1. - 31.12.2004
VUCHT a. s. Bratislava	Investigation of the formation of stable and metastable phases in the reciprocal system 2NH_4^+ , Mg^{2+} // 2NO_3^- , SO_4^{2-} – H_2O		1.1. – 31.12.2004
YENERGY, s. r. o. Prešov	Influence of the addition of ZrO_2 on the aluminium electrowinning.		1.1. – 31.12.2004
ZF BOGE Elastmetall Slovakia a. s. Trnava	The Analysis of the Properties of the Aluminium Tubes Anodic Layer		1.1. – 31.12.2004
SHMÚ	Balance of green house emissions	Ing. Janka Szemesova	16.6. - 31.10.2004

B. International Cooperation

Institution	Type of cooperation	Responsible person	Duration
NTNU Trondheim, Norway	Sulphur in cryolitic melt	Prof. Jomar Thonstad	January - December 2004

C. Membership in Domestic Organizations and Societies

Name	Organisation or Society	Position	Valid date
M. Chovancová	Slovak Society for Surface Treatment and Technology	other	from 1995
M. Chovancová	Slovak Chemical Society	member	from 1987
M. Chovancová	Slovak Cleaner Production Centre	member	from 1993
M. Chovancová	Union of Slovak Scientific and Technological Societies	member	from 1972
J. Híveš	Slovak Society for Surface Treatment and Technology	member	from 1987
J. Híveš	Slovak Chemical Society	member	from 2000
J. Híveš	Union of Slovak Scientific and Technological Societies	member	from 1987
A. Žúžiová	Slovak Chemical Society	member	from 1993
A. Žúžiová	Union of Slovak Scientific and Technological Societies	member	from 1972
J. Gabčová	Slovak Chemical Society	member	from 1972
J. Gabčová	Union of Slovak Scientific and Technological Societies	member	from 1972
J. Valtýni	Union of Slovak Scientific and Technological Societies	member	from 1972
V. Khandl	Union of Slovak Scientific and Technological Societies	member	from 1972
V. Danielik	Slovak Chemical Society	member	from 1992
M. Zemanová	Slovak Chemical Society	member	from 1992
M. Zemanová	Slovak Society for Surface Treatment and Technology	member	from 1995
P. Fellner	Slovak Chemical Society	member	from 1972
P. Fellner	Union of Slovak Scientific and Technological Societies	member	from 1972
P. Fellner	Slovak Society for Surface Treatment and Technology	member	from 1995
P. Fellner	Scientific Board of UACH SAV	member	2003
P. Fellner	Editorial Board of Chemical Papers	member	2003
P. Fellner	Scientific Board of Faculty of Technology of University of Trenčín	member	2003

D. Membership in International Organisations and Societies

Name	Organisation or Society	Position	Valid date
P. Fellner	EFCE, group Electrochemical Engineering	member	from 1999
J. Híveš	International Society of Electrochemistry	member	from 2000

E. Visitors from abroad

Name	Organisation or Institution	State	Date / Duration
Prof. J. Thonstad	NTNU, Trondheim	Norway	March 2004 (3 days)
Prof. J. Thonstad	NTNU, Trondheim	Norway	November 2004 (1 week)
Dr. K. Bouzek	VŠCHT, Prague	Czech Republic	June 2004 (2 day)
Dr. K. Bouzek	VŠCHT, Prague	Czech Republic	November 2004 (1 day)

F. Visits of Staff Members and Postgraduate Students in Foreign Institutions

Name	Organisation / Institution / Conference	State	Date / Duration
M. Zemanová	BRD FZ Karlsruhe	Germany	January - September 2004 (9 month)
P. Fellner	VŠP, Ostrava	Czech Republic	February 2004 (1 day)
P. Fellner	AER Working Group, Třešť	Czech Republic	April 2004 (4 days)
P. Fellner	VŠCHT, Prague	Czech Republic	June 2004 (1 day)
P. Fellner	International Society of Electrochemistry, Thessaloniki	Greece	September 2004 (6 days)
P. Fellner	BorsodChem, Ostrava	Czech Republic	October 2004 (1 day)
J. Híveš	VŠCHT, Prague	Czech Republic	March 2004 (2 days)
J. Híveš	Inovative Ferrate(VI) Technology, Prague	Czech Republic	May 2004 (2 days)
J. Híveš	CHISA 2004, Prague	Czech Republic	August 2004 (4 days)
V. Danielik	AER Working Group, Třešť	Czech Republic	April 2004 (4 days)
V. Danielik	NRI, Řež	Czech Republic	June 2004 (1 day)
V. Danielik	EUCHEM 2004, Piechowice	Poland	June 2004 (1 week)
V. Danielik	Meeting of Chemical Societies, Ostrava	Czech Republic	September 2004 (4 days)
J. Gabčová	Meeting of Chemical Societies, Ostrava	Czech Republic	September 2004 (4 days)
M. Benová	Meeting of Chemical Societies, Ostrava	Czech Republic	September 2004 (4 days)
M. Benová	Inovative Ferrate(VI) Technology, Prague	Czech Republic	May 2004 (2 days)
M. Nemčková	Meeting of Chemical Societies, Ostrava	Czech Republic	September 2004 (4 days)
J. Jurišová	Meeting of Chemical Societies, Ostrava	Czech Republic	September 2004 (4 days)
M. Ambrová	EUCHEM 2004, Piechowice	Poland	June 2004 (1 week)
M. Ambrová	CHISA 2004, Prague	Czech Republic	August 2004 (4 days)
Z. Gálíková	Progresivní a netradiční technologie povrchových úprav	Czech Republic	November 2004 (3 days)

VII. THESES AND DISSERTATIONS

A. Graduate Theses (Bc Degree) for state examinations after three years of study

Name	Title of Thesis	Supervisor
Blaho, P.	Throwing Power of Zinc Coatings Preparation	Adamčík, P.
Červenková, M.	Corrosion Resistance of Nickel Coatings	Danielik, V.
Čopan, P.	Kinetics of Limestone Decomposition	Žúžiová, A.
Gál, M.	Waste Solidification	Žúžiová, A.
Hagara, M.	Emission of Methane from Slovak Industry	Danielik, V.
Kipsová, L.	Corrosion of Metals in Sulphuric Acid Solutions	Gálíková, L.
Királyová, K.	Deposition of Composite Coatings on Nickel Matrix	Chovancová, M.
Lencsés, M.	Influence of Conditions of Preparation on Morphology of Magnesium Hydroxide Crystals	Fellner, P.
Mesárošová, M.	Study of Phase Diagrams by Differential Thermal Analysis	Gabčová, J.
Svoboda, D.	Steel Corrosion in Liquid Fertilizers	Ambrová, M.
Vencúrik, M.	Study of Phase Diagrams of Condensed Systems by Thermal Analysis	Gabčová, J.

B. Graduate Theses (MS Degree) for state examinations after five years of study

Name	Title of Thesis	Supervisor
Badura, M.	Pulse Electrodeposition of Ni-W Alloy Coatings	Chovancová, M.
Brestovanský, J.	Waste Solidification	Žúžiová, A.
Hubinářová, K.	Solubility of Lanthanum Oxide in the Melts	Danielik, V.
Chmelová, A.	The Effect of Selected Parameters on Pulling Glass Fibres	Valtýni, J.

Name	Title of Thesis	Supervisor
Macková, J.	Phase and Volume Properties of the Subsystems in the System KF - K ₂ TaF ₇ - Ta ₂ O ₅	Boča, M.
Mrkva, P.	Phase Stability of alpha-SIALONS	Šajgalík, P.
Sýkorová, A.	Sulphur as the Impurity at the Electrowinning of Aluminium	Gabčová, J.
Szegényi, I.	Reactions of Sulphates in the Aluminium Electrolytic Cell	Fellner, P.
Uher, D.	Technological Aspects of the Substituted Barium Ferrite Preparation	Kevická, D.
Žitňanský, M.	Photoredox and Catalytic Properties of Schiff Base Containing Iron(III) Thiocyanato Complexes	Šima, J.

E. Habilitation Theses

Name	Title of Thesis	Supervisor
Danielik, V.	Phase Equilibria of Molten Salts. 1. Solid – liquid equilibria 2. Equilibrium liquid aluminium – electrolyte for aluminium electrowinning	Fellner, P.

VII. PUBLICATIONS

CC publications

- [1] Danielik, V., Gabčová, J.: Phase diagram of the system NaF-KF-AlF₃. Journal of Thermal Analysis and Calorimetry, 76, 763 - 773 (2004)
- [2] Danielik, V., Híveš, J.: Low-melting electrolyte for aluminium smelting. Journal of Chemical & Engineering Data 49, 1414-1417 (2004)
- [3] Fellner, P., Korenko, M., Ambrová, M., Danielik, V., Thonstad, J.: Reactions of sulfides in molten cryolite. Thermochimica Acta 410, 87 - 91 (2004)
- [4] Fellner, P., Korenko, M., Danielik, V., Thonstad, J.: The content of sodium in aluminium during electrolysis of the molten systems Na₃AlF₆ - NaCl - Al₂O₃ and NaF - NaCl. Electrochimica Acta 49, 1505 - 1511 (2004)
- [5] Híveš, J., Thonstad, J.: Electrical Conductivity of Low-Melting Electrolytes for Aluminium Smelting. Electrochimica Acta 49, 5111-5114 (2004)
- [6] Fellner, P., Khandl, V.: Phase Diagram of the Reciprocal System 2NH₄⁺, Mg₂⁺ // SO₄²⁻, 2NO₃⁻ - H₂O. Chem. Pap. 58 (4), 221 - 223 (2004)

Publications registered in CA, FSTA and other ISI databases

- [1] Gáliková, Z., Chovancová, M.: The Utilization of Puls Technique for Alloy Coatings Preparation. Korozie a ochrana materialu 48(4), 81 - 84 (2004)

Other publications

- [1] Gáliková, Z., Chovancová, M.: The Electrodeposition of Alloys Layers. Acta Mechanica Slovaca, 3 - B/2004, 33-38 (2004)
- [2] Chovancová, M., Zemanová, M.: The Surface of Aluminium. The Growth of Oxide Layers on Aluminium. Acta Mechanica Slovaca, 3 - B/2004, 59-64 (2004)

Text books

- [1] Benová, M.*, Híveš, J.: Composite coatings - conductivity of stirring heterogenous system. In: Zborník prednášok z medzinárodnej konferencie Vrstvy a povlaky 2004, Rožňov pod Radhoštem 7. - 8. 10. 2004, s. 189 - 194 (2004), ISBN 80-968337-8-2, (Po)
- [2] Gáliková, Z.*, Chovancová, M.: The Utilization of Puls Technique for Alloy Coatings Preparation. In: Zborník prednášok z medzinárodnej konferencie Vrstvy a povlaky 2004, Rožňov pod Radhoštem 7. - 8. 10. 2004, s. 185 - 188 (2004), ISBN 80-968337-8-2, (Po)
- [3] Fellner, P.*: Possibilities of lowering CO₂ emissions at the aluminium smelting In: Zborník z 19. Medzinárodnej konferencie Ochrana ovzdušia, Vysoké Tatry 24. - 26. November 2004, s. 99 - 100 (2004), ISBN 80-233-0500-X, (Pr)
- [4] Gáliková, Z.*, Chovancová, M.: The Utilization of Puls Technique for Alloy Coatings Preparation. In: Zborník prednášok zo 46. medzinárodnej galvanickej konferencie, Bratislava 22. - 23. jún 2004, s. 85 - 92 (2004), ISBN 80-227-2085-2 (Pr)
- [5] Gáliková, Z.*: The Electrodeposition of Ni - W Alloys Deposits by pulze Technique In: Zborník prednášok z 1. Medzinárodného odborného seminára Progresivní a netradiční technologie povrchových úprav, Čejkovice 23. A 24. 11. 2004, s. 93 - 94 (2004), ISBN 80-239-3764-2, (Pr)

- [6] Híveš, J.*, Benová, M., Gál, M.: The Transport of Charge in a heterogenous system In: Zborník prednášok zo 46. medzinárodnej galvanickej konferencie, Bratislava 22. - 23. jún 2004, s. 112 - 120 (2004), ISBN 80-227-2085-2 (Pr)
- [7] Valtýni, J.*: The Consideration on the evaluation of coatings thickness. In: Zborník prednášok zo 46. medzinárodnej galvanickej konferencie, Bratislava 22. - 23. jún 2004, s. 105 - 111 (2004), ISBN 80-227-2085-2 (Pr)
- [8] Ambrová, M.*, Fellner, P., Híveš, J., Thonstad, J.: Electrochemical Reactions of Sulphur Species in Cryolyte Melts. In: Zborník prednášok z EUCHEM 2004, Molten Salts Conference, Piechovice Poland 20. - 25. June 2004, s. 81 (2004), (Po)
- [9] Ambrová, M.*, Fellner, P., Thonstad, J.: Chemical Reactions of Sulphur Species in Cryolyte Melts. In: Zborník prednášok z EUCHEM 2004, Molten Salts Conference, Piechovice Poland 20. - 25. June 2004, s. 101 (2004), (Po)
- [10] Benová, M.*, Híveš, J.: Ferrates (VI) - guarantee of the quality of water for future? In: Zborník prednášok z 56. Sjazdu chemických spoločností, Ostrava 6. 9. - 9. 9. 2004, s. 704 (2004), (Po)
- [11] Danielík, V.*, Gabčová, J.: Phase Diagram of the System NaF - KF - AlF₃. In: Zborník prednášok z 56. Sjazdu chemických spoločností, Ostrava 6. 9. - 9. 9. 2004, s. 724 (2004), (Po)
- [12] Danielík, V.*, Korenko, M., Fellner, P., Thonstad, J.: Thermodynamics of the Molten System Al - Na. In: Zborník prednášok z EUCHEM 2004, Molten Salts Conference, Piechovice Poland 20. - 25. June 2004, s. 118 (2004), (Po)
- [13] Jurišová, J.*, Khandl, V., Fellner, P.: The Adsorption of SO₂ on Alumina In: 56. Sjezd Chemických spoločností. Ostrava (CZ). 6. - 9. 9. 2004, s. 723 (2004), (Po)
- [14] Korenko, M.*, Fellner, P., Ambrová, M., Thonstad, J.: The Phase Diagram of the System Na₃AlF₆ - Al₂S₃. In: Zborník prednášok z EUCHEM 2004, Molten Salts Conference, Piechovice Poland 20. - 25. June 2004, s. 150 (2004), (Po)
- [15] Nemčeková, M.*, Gabčová, J., Danielík, V.: Solubility of Lanthanum Oxide in Melts In: Zborník prednášok z 56. Sjazdu chemických spoločností, Ostrava 6. 9. - 9. 9. 2004, s. 723 (2004), (Po)
- [16] Danielík, V.*, Korenko, M., Fellner, P.: Thermodynamics of the Molten System Al - Na. In: Zborník prednášok z 56. Sjazdu chemických spoločností, Ostrava 6. 9. - 9. 9. 2004, s. 541 (2004), (Pr)
- [17] Fellner, P.*, Ambrová, M., Híveš, J.: Electrochemistry of sulphate ions in fluoride melts. In: Zborník prednášok z 55. Annual Meeting of the International Society of Electrochemistry, Thessaloniki, Greece 19. - 24. September 2004, s. 1338 (2004), (Pr)
- [18] Híveš, J.*, Ambrová, M., Fellner, P.: Behaviour of sulphur in aluminium cells - electrochemical reactions. In: Zborník prednášok z konf. CHISA 2004, 16. International Congress of Chemical and Proces Engineering, Praha Czech Republik, 22 - 26 August 2004, s. 172 (2004), (Pr)
- [19] Híveš, J.*, Thonstad, J.: Electrical conductivity of low - melting electrolytes. In: Zborník prednášok z konf. CHISA 2004, 16. International Congress of Chemical and Proces Engineering, Praha Czech Republik, 22 - 26 August 2004, s. 173 (2004), (Pr)
- [20] Thonstad, J.*, Kisza, A., Híveš, J.: The Kinetics of the Anode Reaction on Inert Anodes in very Acid NaF - AlF₃ - Al₂O₃ Melts. In: Zborník prednášok z EUCHEM 2004, Molten Salts Conference, Piechovice Poland 20. - 25. June 2004, s. 65 (2004) (Pr)
- [21] Benová, M.*, Híveš, J.: Ferrates (VI) - guarantee of the quality of water for future? In: Zborník z 5. Seminára Pokroky v anorganickej chémii, Modra 22. - 25. Júna 2004, s. 31 (2004), ISBN 80-233-1956-2 (Pr)
- [22] Jurišová, J.*, Khandl, V.: The Adsorption of SO₂ on Alumina In: Zborník z 5. Seminára Pokroky v anorganickej chémii, Modra 22. - 25. Júna 2004, s. 69 (2004), ISBN 80-233-1956-2 (Pr)
- [23] Nemčeková, M.*, Gabčová, J., Danielík, V.: Solubility of Lanthanum Oxide in Melts In: Zborník z 5. Seminára Pokroky v anorganickej chémii, Modra 22. - 25. Júna 2004, s. 55 (2004), ISBN 80-233-1956-2 (Pr)

Contracts

- [1] Fellner, P., Danielík, V., Khandl, V.: Investigation of aluminium solubility in fluoride melts. ZoD 144/04, Materials Technology, NTNU, Norway
- [2] Fellner, P., Danielík, V.: Expert report on greenhouse gases emissions in industrial processes in Slovak Republic in 2003. ZoD 116/04, SHMÚ Bratislava
- [3] Fellner, P., Danielík, V.: Investigation of aluminium solubility in fluoride melts. ZoD 166/04, Materials Technology, NTNU, Norway
- [4] Fellner, P., Danielík, V.: Evaluation of trends in greenhouse gases emissions. ZoD 117/04, SHMÚ Bratislava
- [5] Fellner, P., Khandl, V.: Investigation of the formation of stable and metastable phases in the reciprocal system 2NH₄⁺, Mg²⁺ // 2NO₃⁻, SO₄²⁻ - H₂O ZoD 42/04, VUCHT a. s. Bratislava
- [6] Híveš J., Fellner P., Ambrová M.: Influence of the addition of ZrO₂ on the aluminium electro winning. ZoD 44/04, YENERGY, s. r. o. Prešov
- [7] Chovancová, M.: The Analysis of the Properties of the Aluminium Tubes Anodic Layer. ZoD 91/04, ZF BOGE Elastmetall Slovakia a. s. Trnava

DEPARTMENT OF LANGUAGES

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I. STAFF

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Technical staff:

Katarína Vépyová;

II. TEACHING AND RESEARCH LABORATORIES

A. Teaching laboratories:

English language classroom
German language classroom
Computer-operated Data Video Projector Room

B. Research laboratories:

III. TEACHING

A. Undergraduate Study:

1. semester (Bc)	Technical English I.	0/2/0	Horáková, Kachničová, Oreská, Polóniová, Štefanovičová
	Technical German I.	0/2/0	Kuželová
	English language I.	0/2/0	Harmanová, Horáková, Kachničová, Oreská, Polóniová
	Slovak language I. (for foreign students)	/0/4/0	Kuželová
1. semester (Bc)	Russian language	0/2/0	Harmanová
	German language	0/2/0	Kuželová
	English conversation	0/2/0	Kachničová
1. semester (Bc)	Technical English II.	0/2/0	Harmanová, Horáková, Oreská, Polóniová, Štefanovičová
	Technical German II.	0/2/0	Kuželová
	English language II.	0/2/0	Harmanová, Horáková, Kachničová, Oreská, Polóniová
	Slovak language II. (for foreign students)	/0/4/0	Kuželová
1. semester (Bc)	Russian language	0/2/0	Harmanová
	German language	0/2/0	Kuželová
	English conversation	0/2/0	Kachničová
1. semester (Bc)	Technical English I.	0/2/0	Harmanová, Horáková, Oreská, Polóniová, Štefanovičová
	Technical English II.	0/2/0	Harmanová, Horáková, Kachničová, Oreská, Polóniová
	English language I.	0/2/0	Harmanová, Horáková, Oreská, Polóniová, Štefanovičová
	English language II.	0/2/0	Harmanová, Horáková, Oreská, Polóniová, Štefanovičová
1. semester (Bc)	Russian Language	0/2/0	Harmanová
	German Language	0/2/0	Kuželová
	English konversation	0/2/0	Kachničová

1. semester (Bc)	Technical English I.	0/2/0	Harmanová, Horáková, Oreská, Polóniová, Štefanovičová
	Technical English II.	0/2/0	Harmanová, Horáková, Kachničová, Oreská, Polóniová
	English language I.	0/2/0	Harmanová, Horáková, Oreská, Polóniová, Štefanovičová
	English language II.	0/2/0	Horáková, Kachničová, Oreská, Polóniová, Štefanovičová
1. semester (Bc)	Russian Language	0/2/0	Harmanová
	German Language	0/2/0	Kuželová
	English conversation	0/2/0	Kachničová
1. semester (Bc)	Technical English I.	0/2/0	Harmanová, Horáková, Oreská, Polóniová, Štefanovičová
	Technical English II.	0/2/0	Harmanová, Horáková, Oreská, Polóniová, Štefanovičová
	English language I.	0/2/0	Horáková, Kachničová, Oreská, Polóniová, Štefanovičová
	English language II.	0/2/0	Horáková, Kachničová, Oreská, Polóniová, Štefanovičová
1. semester (Bc)	Russian Language	0/2/0	Harmanová
	German Language	0/2/0	Kuželová
	English conversation	0/2/0	Kachničová
1. semester (Bc)	Technical English I.	0/2/0	Harmanová, Horáková, Oreská, Polóniová, Štefanovičová
	Technical English II..	0/2/0	Harmanová, Horáková, Oreská, Polóniová, Štefanovičová
	English language I.	0/2/0	Horáková, Kachničová, Oreská, Polóniová, Štefanovičová
	English language II.	0/2/0	Horáková, Kachničová, Oreská, Polóniová, Štefanovičová

B. Postgraduate Study:

3 semesters of an optional course in English for Specific Purposes /0/2/0; Oreská, Štefanovičová

IV. CURRENT RESEARCH PROJECTS

V. CURRENT EDUCATION PROJECTS

A. Pedagogical project No 304/03 Aspects of Teaching Foreign Languages for Specific Purposes at the University of Technology (Veronika Polóniová)

Aims of the project are : to realise teaching of foreign languages in distant form of study; to prepare innovative material suitable for on-line study of foreign languages at FCHPT; to teach basics of ESP and GSP for the needs of profession.

Project duration: from 01.01.2003 to 31.12.2005

VI. COOPERATION

A. Cooperation in Slovakia

Institution	Type of cooperation	Responsible person	Duration
Language departments of STU, Bratislava	Preparing syllabuses for EU exam courses UNICERT introducing besides the general language also the area of professional language	Polóniová Veronika, assistant professor, FCHPT STU, Radlinského 9, 812 37 Bratislava	01.01.2000 -
Specialist departments of FCHPT STU, Bratislava	Language section of the annual "Students' Scientific and Research Activity" competition - advisers Zálupský Peter, Šima Jozef	Oreská Alžbeta, head of Language Department, FCHPT STU, Radlinského 9, 812 37 Bratislava	01.01.1994 -

Institution	Type of cooperation	Responsible person	Duration
Slovak Association of Translators and Interpreters, Bratislava	Multimedia and Translation	Polóniová Veronika, assistant professor, FCHPT STU, Radlinského 9, 812 37 Bratislava	01.01.1998 -
University of Third Age, STU, Bratislava	Language course	Oreská Alžbeta, head of Language Department, FCHPT STU, Radlinského 9, 812 37 Bratislava, Štefanovičová Zuzana, assistant professor, FCHPT STU	1. 9. 2003 - 1. 9. 2004 -
Language Centre, Rectorate of STU, Bratislava	Language courses: ZoD 2/330/04, ZoD 84/330/04	Kuželová Viera, head of Language Centre STU, Laurinská 14, 810 00 Bratislava	01.01.1994 -

B. International Cooperation

Institution	Type of cooperation	Responsible person	Duration
CASAJC, Bratislava	Slovak and Czech Association of Language Centres in Higher Education- preparing materials for Portfolio and Unicert	Oreská Alžbeta, head of Language Department, FCHPT STU, Radlinského 9, 812 37 Bratislava	01.02.2003 -
Leonardo da Vinci Community	EU Vocational Action Programme - practical placements for Slovak University students (cooperation with Civil Engineering Faculty STU)	Horáková Magdaléna, assistant professor, FCHPT STU	12.12.2003 -

C. Membership in Domestic Organizations and Societies

Name	Organisation or Society	Position	Valid date
Slovak Association of Translators and Interpreters, Bratislava	Translation and Interpreting in Technical English(Polóniová Veronika)	member	01.01.1998 -

D. Membership in International Organisations and Societies

Name	Organisation or Society	Position	Valid date
British Council - Resource Centre, Bratislava	Teaching English for Specific Purposes (Horáková Magdaléna)	member	01.09.1996 -
CERCLES/CASAJC, Slovak Republic	European Confederation of Language Centres in Higher Education(Horáková, Oreská, Polóniová, Štefanovičová)	member	11.02.2003 -

VIII. PUBLICATIONS

DEPARTMENT OF MANAGEMENT

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Technical staff:

Katarína Macušková

II. TEACHING AND RESEARCH LABORATORIES

A. Teaching laboratories:

Laboratory of Computerized Technique

III. TEACHING

A. Undergraduate Study:

1. semester (Bc)	Fundamentals of Environmental Philosophy	(2-0 h)	Špirko
1. semester (Bc)	Economics	(2-0 h)	Majerník
3. semester (Bc)	Logics	(2-0 h)	Špirko
1. semester (Bc)	Economics and Management of Enterprise	(2-2 h)	Šostroneková, Jozefček, Kajanová,
	Marketing	(2-2 h)	Špirko
	Social Communication	(2-0 h)	Špirko
1. semester (Bc)	Accounting	(2-2 h)	Šostroneková
	Introduction to Law	(2-0 h)	György
	Semester Project	(0-4 h)	Baran
1. semester (Bc)	Calculations and Prices	(2-2 h)	Šostroneková, Plchová, Kajanová
	Corporate Economics	(2-2 h)	Herzka, Jozefček
	Operations Research	(3-2 h)	Šostroneková, Kuperová
	Strategic Management	(3-2 h)	Herzka, Jozefček
1. semester (Bc)	Capital Market and Corporation Finances	(2-0 h)	Baran
	Decision-Making in Business	(2-3 h)	Herzka
	Human Resource Management	(2-2 h)	Herzka
	Marketing	(2-0 h)	Špirko
	Organizational Structure of Entrepreneurial Subjects	(2-3 h)	Baran
	Production Management	(2-3 h)	Baran, Kuperová
1. semester (Bc)	Analysis of Business Economics	(3-2 h)	Baran, Majerník, Zatrochová
	Financial Management	(3-2 h)	Baran, Zatrochová
	Fundamentals of Mercantile and Financial Law	(2-0 h)	György
	International Marketing	(2-2 h)	Špirko
	Logistics	(2-2 h)	Kuperová
	Annual Project	(0-4 h)	Baran

IV. CURRENT RESEARCH PROJECTS

Project A-162/2003

Application of modern management methods in chemical and food-processing enterprises

Leader of the project: Dušan Baran

Project participants: Agáta Ďurkovičová, Pavel Herzka, Marta Šostroneková, Dušan Špirko, Štefan György, Martina Kuperová, Milan Majerník, Jana Pichová, Martin Jozefček, Jana Kajanová, Martina Svítková, Monika Zatrochová, Martin Mikloš, Katarína Macušková.

Parts of the project:

Environmental management in conditions of the chemical and food-processing enterprises (Leader of the part A: Dušan Špirko. Participants: Štefan György, Ing. Jana Pichová)

Financial management of chemical and food-processing enterprises in Slovakia (Leader of the part B: Dušan Baran. Participants: Martina Kuperová, Milan Majerník, Martina Svítková, Monika Zatrochová, Katarína Macušková)

Modern trends in the management of a firm. (Leader of the part C: Pavel Herzka. Participants: Agáta Ďurkovičová, Marta Šostroneková, Martin Jozefček, Jana Kajanová, Martin Mikloš)

Research in 2003 was carried out within the basic orientation of the project giving emphasis to „Financial management of chemical and food-processing enterprises in Slovakia” (part B)

Scientific objectives in 2004:

Influences of tax reform after 1st January, 2004 on financial policy of business subjects

Financial management of enterprise after accession Slovak Republic in EU, consequences, opportunities and threats

The position of capital market in Slovak republic after accession in the European Union and its consequences for chemical and food-processing enterprises

Development of small and medium enterprises after accession in intergration groups European Union

Asset of structural funds as a cohesive fund EU for development chemical and food industry

Scientific objectives in 2004 were executed.

In terms of the point 1 concerned with „Influences of tax reform after 1st January, 2004 on financial policy of business subjects“ analysis influences of tax reform to business subjects, particularly for chemical, cellulose-paper and food-processing enterprises – was carried out. The results of this analysis are basis for the next research of real impacts of tax reform.

In terms of the point 2 „Financial management of enterprise after accession Slovak Republic in EU, consequences, opportunities and threats“, new aspects in connection with accession in EU for enterprises, tariff policy, movement of labour and capital was analysed.

In terms of the point 3 „The position of capital market in Slovak republic after accession in the European Union and its consequences for chemical and food-processing enterprises“, the present-day situation of capital market in Slovak republic, exchanges after accession in the European Union, identification of opportunities and threats in slovak capital market in the future was analysed.

In terms of the point 4 “Development of small and medium enterprises after accession in intergration groups European Union”, exchange conditions of homogeneous economic space – European Union, from the aspect of opportunities (without barrier entering to European Union’ market) and threats (comparable possibilities of business subjects in EU, extension of competitive environment) was analysed. State support motivations, possibility of EU’ support for small and medium sized enterprises was monitored.

In terms of the point 5 “Asset of structural funds as a cohesive fund EU for development chemical and food industry”, survey of possibilities of drawing from this funds for chemical and food industry was explored.

The information was obtained using:

analysis of influences of tax reform on financial policy of business subjects,

summary of opportunities and threats, consequences of tax reform for chemical and food-processing enterprises, exchanges in the position of financial management of enterprise, exchange after opening of European Market, exchange in manager behaviour,

importance of capital market in Slovak republic after accession in the European Union and consequences for chemical and food-processing enterprises,

alternative solving of Security Exchange Bratislava’ problems in Slovakia, improvement decision of entering slovak firms on Security Exchange Europe,

competitive advantage of small and medium enterprises after accession in the European Union in the face of EU’ entrepreneurial subjects, threats of extension of competitive environment in environment of small and medium enterprises,

functions of project management by excercitation a request on drawing from structural funds and cohesive fund from EU.

In addition to the basic research programme in 2004 some research works were implemented also within other assignments.

A. “Environmental management in conditions of the chemical and food-processing enterprises”

In this part of the project the questions of the relation of ethics and economics, influence of values, principles and virtues of environmental and economic ethics into the economic thinking and behaviour, place of environmental management in education system of management on universities, appreciation of experiences in inputting of environmental management systems in Slovak republic, problems of systems of environmental management in small and medium enterprises, comparison of private and civil law trends in enterprising in Slovak republic, importance of electronic signature in e-commerce, problems of increasing of responsibility of producer and trade towards the consumer, was explored.

C. “Modern trends in the management of a firm”

In this part of the project the questions of human resource management in Slovak republic, application of total quality management in an enterprise, importance of Supply chain management, calculations and their exploitation in building engineering, pedagogics and quality management, nature and strategic importance of education, position of profits in accounting and legislation of SR, presence and perspectives of evolution of entrepreneurial environment in Slovak republic, creation and utilization of databases in corporate practice, importance of costs and profit accounting for management of civil engineering enterprises, transnational harmonization of accounting in SR, accounting in SR and its harmonization process with transnational systems.

Project duration: from 1 January 2003 to 31 December 2005

V. CURRENT EDUCATION PROJECTS

VI. COOPERATION

A. Cooperation in Slovakia

Institution	Type of cooperation	Responsible person	Duration
Frucona Košice, Inc.	Material-technical cooperation	Ing. Ján Király, general manager and chairman of the Board of directors	
CCW, Ltd. Bratislava	Pedagogic cooperation	Dipl.Ing. Magdaléna Sulanová, marketing manager	
Slovak association of small enterprises	Scientific-technical cooperation	Ing. Vladimír Sirotko, PhD.	
Stock exchange, Inc. in Bratislava	Pedagogic cooperation	Ing. Barbora Lazorová	
TENTO, Inc. Žilina	Material-technical cooperation	Ing. Marián Majtán, financial director	
Chemosvit, Inc. Svit	Material-technical cooperation	Ing. Vlad. Balogh, Ing. Ján Olekšák	
Matej Bel University, Faculty of Economics, Banská Bystrica	Pedagogical cooperation	Assoc. Prof. Jaroslav Ďado Prof. Ľubica Lesáková Prof. Marková Assoc.Prof. František Lipták	
University of Economy, Bratislava	Pedagogical cooperation	Prof. Július Alexy Prof. Miroslav Majtán Prof. Štefan Slávik Assoc. Prof. Šubertová Elena	
University of Žilina, Faculty of Economics, Transport and Communication	Pedagogical cooperation	Prof. Štefan Cisko Prof. Štefan Hittmar Assoc. Prof. Jozef Strišš Assoc. Prof. Szilágyi	
Slovak University of Technology, Faculty of Materials Science and Technology, Trnava	Pedagogical cooperation	Prof. Jozef Sáblik Assoc.Prof. Miloš Čambal Assoc. Prof. Alexander Štrbka Assoc. Prof. Peter Sakál	

Institution	Type of cooperation	Responsible person	Duration
Slovak University of Technology, Faculty of Mechanical Engineering	Pedagogical cooperation	Assoc. Prof. Štepka Igor Prof. Dita Hekelová	
Slovak University of Technology, Faculty of Civil Engineering	Pedagogical cooperation	Prof. Koloman Ivanička Assoc. Prof. Mária Zúbková Prof. Trávník Igor	
Alexander Dubček University, Faculty of Social-Economic Relations, Trenčín	Pedagogical cooperation	Prof. Baráňik Michal Assoc. Prof. Sergej Vojtovič	
Comenius University Bratislava, Faculty of Management	Pedagogical cooperation	Prof. Sedlák Michal Assoc. Prof. Ľubica Bajžíková	

B. International Cooperation

Institution	Type of cooperation	Responsible person	Duration
BORSOD CHEM Moravian Chemical Plants, Ostrava Czech Republic	Material-technical and pedagogic cooperation	Ing. Alexander Pálffy, CSc. general manager	
University of Economics, Faculty of Business Administration, Prague, Czech Republic	Pedagogical cooperation	Prof. Eduard Stehlík Assoc. Prof. Ludmila Mládková Assoc. Prof. Jan Koudelka	
Institute of Chemical Technology, Faculty of Chemical Engineering, Prague, Czech Republic	Pedagogical cooperation	Prof. Ivan Gros Assoc. Prof. Stanislava Grosová	
Karol Adamiecki University of Economics in Katowice, Faculty of Management, Poland	Pedagogical cooperation	Prof. Kornelia Karcz Prof. Żofia Kedzior	
University of Economics in Krakow, Faculty of Management, Poland	Pedagogical cooperation	Prof. Jan W. Wiktor Assoc. Prof. Grażyna Woźnievska	
Tallin Technical University	Pedagogical cooperation	Prof. habil. doctor Vaino Rajangu	
Vilnius University, Faculty of Humanities in Kaunas, Lithuania	Pedagogical cooperation	Prof. Vítuskas Vengrauskas Assoc. Prof. Jogaila Mačerinskas Assoc. Prof. Irena Mačerinskas	
Masaryk University Brno, Faculty of Economics and Administration, Czech Republic	Pedagogical cooperation	Prof. Blažek Miroslav Dr. Viliam Záthurecký	
Technische Universität (Technical University) Darmstadt, Institut für Betriebswirtschaftslehre	Pedagogical cooperation	Prof. Dr. Günther Specht	
L'vov Polytechnic National University, Institute of Economics and Management, Ukraine	Pedagogical cooperation	Assoc. Prof. Natalia Čuchraj	
Kiev National Economic University, Ukraine	Pedagogical cooperation	Prof. I. L. Reshetnikova	
University of Pardubice, Faculty of Chemical Technology, Czech Republic	Pedagogical cooperation	Assoc. Prof. Hana Lošťáková, Assoc. Prof. Oto Machač	

C. Membership in Domestic Organizations and Societies

Name	Organisation or Society	Position	Valid date
Baran, D.	Slovak Society for Industrial Chemistry	member	from 2000
György, Š.	Slovak Society for Industrial Chemistry	member	from 2000
Herzka, P.	Slovak Society for Industrial Chemistry	member	from 2000
Jozefček, M.	Slovak Society for Industrial Chemistry	member	from 2000
Kajanová, J.	Slovak Society for Industrial Chemistry	member	from 2000
Kuperová, M.	Slovak Society for Industrial Chemistry	member	from 2000
Macušková, K.	Slovak Society for Industrial Chemistry	member	from 2000
Majerník, M.	Slovak Society for Industrial Chemistry	member	from 2000
Pichová, J.	Slovak Society for Industrial Chemistry	member	from 2000
Sostroneková, M.	Slovak Society for Industrial Chemistry	member	from 2000

Name	Organisation or Society	Position	Valid date
Špirko, D.	Slovak Society for Industrial Chemistry	member	from 2000
Špirko, D.	Slovak Philosophical Association	member	from 1990
Špirko, D.	Slovak Philosophical Association	vice-president	from 2000 to 2004
Špirko, D.	Slovak Society of Military History and Historical Guns Shooters	secretary	from 1993
Špirko, D.	Slovak Shooting Federation	member	from 1992
Zatrochová, M.	Slovak Society for Industrial Chemistry	member	from 2000

D. Membership in International Organisations and Societies

Name	Organisation or Society	Position	Valid date
Baran, D.	Corporate Governance Association	member	from 2004
Baran, D.	Czech Marketing Society	member	from 2004
Špirko, D.	Central European Napoleonic Society	member	from 2000

E. Visitors from abroad

Name	Organisation or Institution	State	Date / Duration
Bagdoniene, L.	Kaunas University of Technology, Kaunas	Lithuania	May 2004 / 2 days
Bajoruniene, I. S.	Faculty of Social Sciences, Kaunas University of Technology, Kaunas	Lithuania	May 2004 / 2 days
Bartes, F.	Faculty of Business and Management, Brno University of Technology	Czech Republic	May 2004 / 2 days
Bartoš, V.	Faculty of Business and Management, Brno University of Technology, Brno	Czech Republic	May 2004 / 2 days
Belinskaja, L.	Vilnius University, Vilnius	Lithuania	May 2004 / 2 days
Botek, M.	Faculty of Chemical Engineering, Institute of Chemical Technology, Prague,	Czech Republic	May 2004 / 2 days
Branská, L.	University of Pardubice, Faculty of Chemical Technology	Czech Republic	May 2004 / 2 days
Ciegis, R.	Kunas Faculty of Humanities, Vilnius University, Kaunas	Lithuania	May 2004 / 2 days
Pareigis, R.	Kunas Faculty of Humanities, Vilnius University, Kaunas	Lithuania	May 2004 / 2 days
Grosová, S.	Faculty of Chemical Engineering, Institute of Chemical Technology, Prague,	Czech Republic	May 2004 / 2 days
Gros, I.	Faculty of Chemical Engineering, Institute of Chemical Technology, Prague,	Czech Republic	May 2004 / 2 days
Hes, A.	Czech University of Agriculture, Faculty of Economics and Management, Prague	Czech Republic	May 2004 / 2 days
Hluchníková, M.	VŠB - Technical University of Ostrava, Faculty of Economics, Ostrava	Czech Republic	May 2004 / 2 days
Humlová, V.	VŠB - Technical University of Ostrava, Faculty of Economics, Ostrava	Czech Republic	May 2004 / 2 days
Kohoutová, M.	University of Pardubice, Faculty of Chemical Technology, Pardubice	Czech Republic	May 2004 / 2 days
Koudelka, J.	University of Economics, Faculty of Business Administration, Prague	Czech Republic	May 2004 / 2 days
Vengrauskas, V.	Faculty of Economics, Vilnius University, Vilnius	Lithuania	May 2004 / 2 days
Lošťáková, H.	University of Pardubice, Faculty of Chemical Technology, Pardubice	Czech Republic	May 2004 / 2 days
Macerinskiene, I.	Kaunas University of Technology, Kaunas	Lithuania	May 2004 / 2 days
Machač, O.	University of Pardubice, Faculty of Chemical Technology, Pardubice	Czech Republic	May 2004 / 2 days
Matiušaitytė, R.	Kunas Faculty of Humanities, Vilnius University, Kaunas	Lithuania	May 2004 / 2 days
Merenda, M.	VŠB - Technical University of Ostrava, Faculty of Economics, Ostrava	Czech Republic	May 2004 / 2 days
Michalko, M.	VŠB - Technical University of Ostrava, Faculty of Economics, Ostrava	Czech Republic	May 2004 / 2 days
Minaříková, V.	Faculty of Business and Management, Brno University of Technology	Czech Republic	May 2004 / 2 days

Name	Organisation or Institution	State	Date / Duration
Mládková, L.	University of Economics, Faculty of Business Administration, Prague,	Czech Republic	May 2004 / 2 days
Mačerinskas, J.	Kaunas University of Technology, Kaunas	Lithuania	May 2004 / 2 days
Pálffy, A.	BorsodChem MCHZ, ltd. Ostrava	Czech Republic	May 2004 / 2 days
Rajangu, V.	Tallin Technical University	Estonia	May 2004 / 2 days
Schelle, K.	Faculty of Law, Masaryk University in Brno	Czech Republic	May 2004 / 2 days
Simanavičienė, Ž.	Kunas Faculty of Humanities, Vilnius University, Kaunas	Lithuania	May 2004 / 2 days
Steinová, M.	VŠB - Technical University of Ostrava, Faculty of Economics, Ostrava	Czech Republic	May 2004 / 2 days
Šimberová, I.	Faculty of Business and Management, Brno University of Technology	Czech Republic	May 2004 / 2 days
Tůmovcová, P.	Czech University of Agriculture, Faculty of Economics and Management, Prague,	Czech Republic	May 2004 / 2 days
Vávra, J.	University of Pardubice, Faculty of Chemical Technology, Pardubice		May 2004 / 2 days
Vidauskaite, S.	Kaunas University of Technology, Kaunas	Lithuania	May 2004 / 2 days
Višniauskas, V.	Kaunas University of Technology, Kaunas	Lithuania	May 2004 / 2 days
Woźniewska, G.	Wroclaw University of Economics, Wroclaw	Poland	May 2004 / 2 days
Záthurecký, V.	Faculty of Economics and Administration, Masaryk University in Brno	Czech Republic	May 2004 / 2 days
Falk, T.	Kloeber, g.m.b.h.	Germany	August 2004 / 1 day
Falk, T.	Kloeber, g.m.b.h.	Germany	September 2004 / 1 day
Falk, T.	Kloeber, g.m.b.h.	Germany	October 2004 / 1 day
Mačerinskas, J.	Kaunas University of Technology, Kaunas	Lithuania	October 2004 / 2 days
Macerinskiene, I.	Kaunas University of Technology, Kaunas	Lithuania	October 2004 / 2 days
Suchart, K.	Lafargue Company	Germany	November 2004 / 1 day

F. Visits of Staff Members and Postgraduate Students in Foreign Institutions

Name	Organisation / Institution / Conference	State	Date / Duration
Baran, D.	Vilnius University, Vilnius	Lithuania	April-May 2004 / 3 days
Baran, D.	Faculty of Business and Management, Brno University of Technology, Brno-Rozdvojevce	Czech Republic	May 2004 / 2 days
Baran, D.	Faculty of Chemical Engineering, Institute of Chemical Technology, Prague	Czech Republic	June 2004 / 2 days
Kajanová, J.	Faculty of Chemical Engineering, Institute of Chemical Technology, Prague	Czech Republic	June 2004 / 2 days
Zatrochová, M.	Faculty of Chemical Engineering, Institute of Chemical Technology, Prague	Czech Republic	June 2004 / 2 days
Baran, D.	Faculty of Business and Management, Brno University of Technology, Brno	Czech Republic	August 2004 / 2 days
Baran, D.	56th Congress of Czech Chemical Societies, VŠB - Technical University of Ostrava	Czech Republic	September 2004 / 4 days
Baran, D.	Faculty of Business and Management, Brno University of Technology, Brno	Czech Republic	November 2004 / 2 days
Jozefček, M.	Faculty of Business and Management, Brno University of Technology, Brno	Czech Republic	November 2004 / 2 days

VII. THESES AND DISSERTATIONS

A. Graduate Theses (Bc Degree) for state examinations after three years of study

Name	Title of Thesis	Supervisor
Bednářová, Z.	Management of a Firm - Function of Planning	Šostroneková, M.
Benčková, M.	Firm's Financial Policy	Baran, D.
Bilančíková, B.	Tax Reform after Januari 1st 2004 and its Influence on Business Environment in the Slovak Republic	Baran, D.

Name	Title of Thesis	Supervisor
Bogdanová, T.	Hierarchy of Production Management	Kuperová, M.
Brtková, M.	Firm's Financing	Svítková, M.
Bublávek, J.	Customer in the Context of Marketing and Advertising	Špirko, D.
Cagalinec, M.	Slovak Bank System	Baran, D.
Ferenčíková, L.	Management of Quality in Business Subjects	Herzka, P.
Filipovičová, P.	Activity of Advertising Agencies in Slovakia	Šostroneková, M.
Gabčová, Z.	Financing of the Firm's Investment Activity	Baran, D.
Hájosová, L.	Management of a Firm and Decision-making Process	Šostroneková, M.
Hrašná, A.	Acquiring of Financial Sources in a Form of Credits	Baran, D.
Jančová, K.	Process of the Working Motivation of Employees	Herzka, P.
Lóbbová, M.	Firm's Costs	Kajanová, J.
Lukáčová, K.	Controlling as a Subsystem of Management	Baran, D.
Nagy, M.	Possibilities of Acquiring Financial Means for Business Subjects of the Slovak Republic from EU Funds	Majerník, M.
Pastucha, M.	Industrial Logistics Spheres	Kuperová, M.
Purová, V.	Financial Aspects in Establishing a Firm	Zatrochová, M.
Ridzoň, J.	Significance of the Creation of Own Sources of Financing a Firm	Majerník, M.

B. Graduate Theses (M.Sc. Degree) for state examinations after five years of study

Name	Title of Thesis	Supervisor
Balážová, A.	Controlling of debts as a component of the financial controlling	Baran, D.
Đurkovičová, E.	Calculation of costs at the Research Institute of Water Economy for selected water analyses	Šostroneková, M.
Fulerčíková, M.	Accounting as an information base for the financial analysis of a firm	Kajanová, J.
Gatálová, S.	Market research and advertising in the marketing communication system	Špirko, D.
Kotianová, P.	Financial analysis of the selected firm	Baran, D.
Kováčová, A.	Marketing and the communication of a firm with public. Position and role of public relations within the communication mix	Špirko, D.
Kozempelová, E.	Costs of quality in a food processing enterprise	Baran, D.
Kuchálik, M.	Financial analysis of a firm	Baran, D.
Némethová, M.	Marketing strategy of the firm Messer-Tatragas, Ltd.	Baran, D.
Partlová, S.	Introduction of the management system of quality in a firm	Herzka, P.
Pavlíková, A.	Analysis of the economy of a selected firm	Majerník, M.
Sabová, J.	Direct marketing - its position in the context of marketing communication	Zatrochová, M.
Stránsky, J.	Role and significance of the Stock Exchange, Inc. Bratislava after the entry of the Slovak Republic into EU	Baran, D.
Tonková, M.	Employment of workers through the personnel agency	Herzka, P.
Varga, J.	Increase in the effectiveness of a firm by means of the rationalisation of costs	Herzka, P.
Závodská, L.	Application of the financial-economic analysis in the enterprise "Zberne surovín Žilina", Inc. (Collecting centre of scrap materials Žilina, Inc.)	Baran, D.
Horňáková, M.	Transformation of the post in the Slovak Republic	Baran, D.

C. Dissertations (PhD)

Name	Title of Thesis	Supervisor
Jozefček, M.	Marketing Strategies for small and medium sized enterprises in IT firms	Chodasova, A.
Kajanová, J.	Accounting of Costs and Revenues	Takács, Z.

VIII. PUBLICATIONS

Books, Chapters in monographs

[1] György, Š.: Fundamentals of Mercantile and Financial Law Vydavateľstvo STU, Bratislava 2004, 264 strán. ISBN 80-227-2152-2.

Other publications

- [1] Baran, D.: Controlling and management system. In: *Ekonomika ir vadyba. Economics and management*. Kaunaská fakulta humanitných vied, Vilniuská univerzita, Vilnius, Litva, roč. 2004, č. 2, s. 8-11, ISSN 1392-8732.
- [2] Baran, D.: Situation in the capital market in Slovakia. In: *EKONOMIKA (Economics). Research Papers*. Vydáva Vilniuská univerzita, Vilnius, roč. 2004, č. 67, s. 22-31, ISSN 1392-1258.
- [3] Baran, D.: What is Expected from University Graduates by the Present-day Industry? In: *Journal of Human Resource Management*. Comenius University Bratislava, Faculty of management, 2003. č. 1-2/2003, s. 77 –84. ISSN – 1335 – 3888
- [4] Zatrochová M.: Global Market in the Slovakia. In: *Ekonomika ir vadyba. Economics and management*. Kaunaská fakulta humanitných vied, Vilniuská univerzita, Vilnius, Litva, roč. 2004, č. 2, s. 94-98, ISSN 1392-8732.
- [5] Šostroneková, M.: Accounting on accounts of an account class 2 - Finance accounts In: *Manažment, mzdy a financie 6-7/2004*, s. 153-187. Vydáva: Ing. Miroslav Mračko, EPOS Bratislava ISSN 1335-9568 (1)
- [6] Šostroneková, M.: Accounting on accounts of an account class 0- Long term property In: *Manažment, mzdy a financie 1-2/2004*, s. 219-276. Vydáva: Ing. Miroslav Mračko, EPOS Bratislava ISSN 1335-9568
- [7] Šostroneková, M.: Accounting on accounts of an account class 1- Stores In: *Manažment, mzdy a financie 5/2004*, s. 107-135. Vydáva: Ing. Miroslav Mračko, EPOS Bratislava ISSN 1335-9568
- [8] Šostroneková, M.: Accounting on accounts of an account class 1- Account payable - Account receiveable In: *Manažment, mzdy a financie 8-9/2004*, s. 130-185. Vydáva: Ing. Miroslav Mračko, EPOS Bratislava ISSN 1335-9568
- [9] Šostroneková, M.: Accounting on accounts of an account class 4- Capital Accounts In: *Manažment, mzdy a financie 10/2004*, s. 98-139. Vydáva: Ing. Miroslav Mračko, EPOS Bratislava ISSN 1335-9568
- [10] Šostroneková, M.: Accounting on accounts of an account class 5- Costs In: *Manažment, mzdy a financie 11-12/2004*, s. 257-289. Vydáva: Ing. Miroslav Mračko, EPOS Bratislava ISSN 1335-9568
- [11] Šostroneková, M.: Accounting on accounts of an account class 6- Profits In: *Manažment, mzdy a financie 13/2004*, s. 122-137. Vydáva: Ing. Miroslav Mračko, EPOS Bratislava ISSN 1335-9568
- [12] Šostroneková, M.: Accounting on accounts of an account class 7- Closing summary accounts In: *Manažment, mzdy a financie 14/2004*, s. 203-205. Vydáva: Ing. Miroslav Mračko, EPOS Bratislava ISSN 1335-9568

Text books

- [1] Baran, D.: Rating is a competitive advantage. In: *Problems of Services Industry Development under the European Intergrading Proces*. Zborník z 3. medzinárodnej vedeckej konferencie Vilnius Univerzity, Economic fakulty, 23. apríl 2004 Vilnius, s. 212 – 215. ISBN 9955-430-51-6.
- [2] Baran, D.: Risk and Liquidity in the Slovak Monetary Market. In: *Management, Economics and Business Development in the new European Conditions*. International Scientific Conference. Brno-Rozdrojovice: FP VUT Brno, 28.-29. máj 2004, s. 9. ISBN 80-214-2661-6
- [3] Baran, D.: System of the management of quality in the enterprise practice. In: *CO-MAT-TECH 2004: Zborník z 12. medzinárodnej vedeckej konferencie MTF STU, Trnava 14.-15. október 2004 Trnava*, s.15. ISBN 80-227-2121-2 (CD 80-227-2117-4)
- [4] Baran, D.: The capital market in Slovakia. In: *Zborník z medzinárodnej vedeckej konferencie „Development of economy: theory and practice“*. Vilnius Univerzity, Kaunas Fakulty of Humanities, 30. september – 2. október 2004, Kaunas Litva. s.64-67. Zborník na CD. ISBN 9955-634-04-9
- [5] Herzka, P.* – Zatrochová M.: Some selected problems of personnel management in present conditions of the economic practice. In: *Personálny manažment v podmienkach formovanie nového európskeho trhu práce: Zborník z medzinárodnej konferencie*. Trenčín: TrUAD v Trenčíne, apríl 2004, s.92-96. ISBN 80-8075-018-1.
- [6] Jozefček, M.: Marketing strategies of small and medium enterprisses. In: *Moderné prístupy k manažmentu podniku*. Zborník z medzinárodnej konferencie, FCHPT STU Bratislava, 13.-14. mája 2004. GC-TECH Ing. Peter Gerši, Trenčín 2004, s. 177-178. ISBN 80-969189-0-7
- [7] Jozefček, M.: Underestimated marketing and strategic management in medium sized enterprisses. In: *Nové trendy rozvoje priemyslu*. Zborník z medzinárodnej vedeckej konferencie, Fakulta podnikateľská VUT Brno, november 2004, Zborník na CD. ISBN 80-214-2787-6
- Kajanová, J.: Factors influencing business enterprise in Slovakia. In: *Zborník z medzinárodnej vedeckej konferencie „Development of economy: theory and practice“*. Vilnius Univerzity, Kaunas Fakulty of Humanities, 30. september – 2. október 2004, Kaunas Litva. s.126-130. Zborník na CD. ISBN 9955-634-04-9
- [8] Zatrochová M.: Business Center in the Global Market In: *Zborník z medzinárodnej vedeckej konferencie „Development of economy: theory and practice“*. Vilnius Univerzity, Kaunas Fakulty of Humanities, 30. september – 2. október 2004, Kaunas Litva. s.89-90. Zborník na CD. ISBN 9955-634-04-9
- [9] Baran, D.: Managerial education on FCHPT STU in Bratislava, history, presence and future. In: *EDUCATION FOR MANAGEMENT – EDMAN 04: Zborník z medzinárodnej konferencie*. Brno MU, PF: Vysoká škola ekonomická v Prahe, združenie EVIDA, Česká manažérska asociácia Praha, VDI BV Dresden, PHF EU Košice, CESAC – Česko-saské centrum, 26.-27. august 2004
- [10] Baran, D.: Protection of investors rights in conditions of slovak capital market In *GEMAN 04, General Management: Zborník z medzinárodnej konferencie*. Mariánské Lázně. - Vysoká škola ekonomická v Prahe, združenie EVIDA, Česká manažérska asociácia Praha, VDI BV Dresden, PHF EU Košice, CESAC – Česko-saské centrum, 16.-18. september 2004
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- [14] György, Š.: Increasing of responsibility of producer and trade towards the consumer In: Nové trendy rozvoje priemyslu. Zborník z medzinárodnej vedeckej konferencie, Fakulta podnikatelská VUT Brno, november 2004, Zborník na CD. ISBN 80-214-2787-6
- [15] Herzka, P.: Human Resource Management in Slovak Republic In: Moderné prístupy k manažmentu podniku. Zborník z medzinárodnej konferencie, FCHPT STU Bratislava, 13.-14. mája 2004. GC-TECH Ing. Peter Gerši, Trenčín 2004, s. 128-131. ISBN 80-969189-0-7
- [16] Herzka, P.: Application of Total Quality Management in a enterprise In: Nové trendy rozvoje priemyslu: Zborník z medzinárodnej konferencie. Fakulta podnikatelská, VUT v Brne, november 2004, zborník na CD. ISBN 80-214-2787-6
- [17] Kajanová, J.: Calculations and their exploitation in building engineering. In: JUNIORSTAV 2004. Zborník zo 6. odbornej konferencie doktorandského štúdia. Brno: Fakulta stavební, Vysoké učení technické Brno, s. 325, 2004. ISBN 80-214-2560-1.
- [18] Kajanová, J.: Pedagogics and quality management In: Zborník z konferencie Kvalita pedagogiky kvality. Trenčín: Trenčianska Univerzita A. Dubčeka v Trenčíne, s. 64-66, 2004. ISBN 80-8075-022-X.
- [19] Kajanová, J.: Nature and strategic importance of education In: Zborník z medzinárodnej vedeckej konferencie Manažment ľudského potenciálu v podniku, Zvolen: Technická univerzita vo Zvolene, s. 209-211, 2004. ISBN 80-228-1330-3.
- [20] Kajanová, J.: Position of profits in accounting and legislation of Slovak Republic In: Nové trendy rozvoje priemyslu. Zborník z medzinárodnej vedeckej konferencie, Fakulta podnikatelská VUT Brno, november 2004, zborník na CD. ISBN 80-214-2787-6
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DEPARTMENT OF MATHEMATICS

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I. STAFF

Full Professors:

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Associate Professors:

Vladimír Baláž, PhD; Anna Kolesárová, PhD; Jiří Pospíchal, DSc; Michal Šabo, PhD; Štefan Varga, PhD

Assistant Professors :

Jozef Antoni, PhD; Július Bánki, PhD; Štefan Boor, MSc; Ivan Garaj, PhD; Viera Grusková, PhD; Eva Hainzlová, MSc; Vladimír Haluška, PhD; Ľubomíra Horanská, PhD; Milan Jasem, PhD;

PhD Students:

ŠTEFAN BABINEC, ING., JOZEF BABJAK, ING., PETER GRANČIČ, ING., PETER SARKOCI, ING., DAGMAR ZELISKOVÁ, ING.

II. TEACHING AND RESEARCH LABORATORIES

A. Teaching laboratories:

Laboratory equipped by personal computers for the Basics of Computer Science

B. Research laboratories:

III. TEACHING

A. Undergraduate Study:

1. semester (Bc)	Calculus I	3/3/0	Baláž, Horanská, Jasem, Kolesárová, Šabo
	Calculus I (external study)	2/2/0	Grusková, Kvasnička
1. semester (Bc)	Calculus II	4/4/0	Baláž, Grusková, Horanská, Jasem, Kolesárová, Šabo
	Calculus II (external study)	2/2/0	Boor, Grusková
	Basics of Computer Science	1/0/2	Antoni, Babjak, Bánki, Boor, Hainzlová
	Basics of Computer Science (external study)	1/0/1	Antoni, Bánki, Boor, Hainzlová
1. semester (Bc)	Calculus III	2/0/2	Antoni, Boor, Garaj, Varga
	Calculus III (external study)	1/0/1	Garaj
1. semester (Bc)	Discrete mathematics	2/1/0	Kolesárová
	Programming and algorithms	2/0/1	Pospíchal
	Numerical mathematics	2/0/1	Šabo
	Computer architecture	2/0/1	Antoni
	Laboratory of specialization	2/0/1	Babinec, Sarkoci
1. semester (Bc)	Artificial intelligence in chemistry	2/0/1	Kvasnička
	Statistics	2/0/1	Varga
	Laboratory of specialization II	0/0/6	Babinec, Sarkoci
1. semester (Bc)	Database systems	2/0/1	Antoni
	Laboratory of specialization	0/0/10	Babjak, Grančič
	Financial mathematics	2/0/0	Horanská

IV. CURRENT RESEARCH PROJECTS

Mathematical vague information processing and its applications

VEGA GRANT No. 1/0085/03 (Anna Kolesárová)
Quantification of uncertainty related to the vagueness of studied objects. Extension of the theory of aggregation operators, new construction methods for aggregation operators, in particular, construction of stable aggregation operators, clarifying their structure and uniqueness. Ordinal aggregation operators for aggregation of data of qualitative nature. The study of possible applications of different types of aggregation operators in inference process in fuzzy logic and construction of new operators for this purpose. Fuzzy preference modelling and decision making. Mixed fuzzy-stochastic models.

Project duration: from 01/01/2003 to 31/12/2005

COST ACTION 274/2 : Theory and Applications of Relational Structures as Knowledge Instruments (TARSKI)

Project EU ISTC (Anna Kolesárová)
The main objective of the Action COST 274 is to advance the understanding and use of relational structures in applicable object domains. The researchers of FCHFT STU are involved in the working group WG3 for the development of non-invasive scaling methods for the prediction of relational data and comparing, and possibly, integrating, a nominal scaling approach with numerical methods such as fuzzy relations, etc. The aim is also the improvement of methods and procedures for gaining information from everyday relational situations such as, e.g., preference models.

Project duration: from 06/2001 to 06/2005

Echo state neural networks

VEGA GRANT No. 1/1047/04 (Jiří Pospíchal)

The goal of the project is the study of a modern approach to recurrent neural networks, which is exceptionally suitable both for a time series prediction, as well as for modeling of cognitive processes in artificial neural systems. Neural network in this approach includes a block of neurons with a recurrent architecture, which is randomly generated and the weight coefficient of its connections are fixed during the learning stage of the network. The input activities incoming to the neural network will be mapped onto a rich dynamic structure of activities of hidden neurons, which are used as an input to the layer of output neurons. The learning of this network consists in adjusting of weight coefficients between hidden neurons and output neurons. Weight coefficients between the hidden and the input neurons and in-between hidden neurons are randomly generated and do not change during the learning stage. Current research emphasis is on evolutionary improvement of networks bringing more robustness to the quality of predictions.

Project duration: from 01/01/2004 to 31/12/2006

Artificial chemistry and molecular evolution

VEGA GRANT No. 1/0062/03 (Vladimír Kvasnička)
Biotic and abiotic molecular systems with kinetics determined by Eigen's replicator system are studied by methods of artificial chemistry. Molecules are represented by strings of tokens over a finite alphabet. These molecules are capable of a physical process called "folding" (an analogy with biomacromolecules RNA). Each molecule is evaluated by a fitness on the basis of its particular folding. Molecules are placed in a chemical-reaction system, where they take part in a reproduction process (with probabilities proportional to their fitness) consisting in a simple copying accompanied by mutations. Such a simple reaction system corresponds to biomacromolecular systems that are capable of Darwinian evolution on molecular level. A goal of evolution specified in this way is an emergence of strings with required folding (required phenotype or a goal phenotype). The present in-silico approach offers a conceptual and notional machinery for a deeper theoretical interpretation and description of molecular Darwinian evolution.

Project duration: from 01/01/2003 to 31/12/2005

V. CURRENT EDUCATION PROJECTS

A. Mathematics on-line: An internet course

KEGA GRANT No. 3/100603 (Jana Dobrakovová/ Anna Kolesárová)

The aim of the project is to propose and create the framework for a dynamical mathematical electronic education using XML documents, with respect to new pedagogical methods. The electronic net course will be addressed to the students of all faculties at STU in the first year of their study.

Project duration: from 01/01/2003 to 31/12/2005

VI. COOPERATION

A. Cooperation in Slovakia

Institution	Type of cooperation	Responsible person	Duration
SjF STU Bratislava	New trends in teaching mathematics	RNDr. V. Záhonová, PhD., Mgr. M. Kováčová, PhD.	2004
SvF STU Bratislava	COST TARSKI 274 cooperation	Prof. Mesiar	2002-2005

B. International Cooperation

Institution	Type of cooperation	Responsible person	Duration
FFP UO, Opava	Organization of a seminar on Artificial Life and Cognition	Prof. RNDr. J. Kelemen, DrSc.	1.5.2000-
University of Alcalá de Henares, Madrid	COST 274 TARSKI cooperation	Prof. Enriqueta Muel	2002-2005
J. Kepler University, Linz	CEEPUS cooperation	Prof. E.P. Klement	2003-2005
Universita di Lecce, Italy	Scientific cooperation in Statistics	Prof. C. Sempi, Dr. F. Durante	2004-2005
Univ. J. Monnet, St. Etienne	Scientific cooperation (prog. Štefánik)	Prof. G. Grekos	2004

C. Membership in Domestic Organizations and Societies

Name	Organisation or Society	Position	Valid date
Kvasnička Vladimír	Slovak Academic Society	member	1997
Kvasnička Vladimír	Slovak Artificial Intelligence Society	chairman	29.8.2000-
Kvasnička Vladimír	Slovak Computer Science Society	member	1.1.1996-
Kvasnička Vladimír	Slovak Society for Mathematicians and Physicists	member	1980-1992
Kvasnička Vladimír	Scientific Commity of FCHPT STU	member	1.9.2002-
Kvasnička Vladimír	Scientific Commity of FIIT STU	member	1.10.2003-
Kvasnička Vladimír	Joint Commission for PhD study in Applied Informatics	member	1.1.1998-
Kvasnička Vladimír	Joint Commission for PhD study in Artificial Intelligence	member	1.1.2000-
Šabo Michal	Joint Commission for PhD study in Applied Mathematics	member	1.1.1998-
Kvasnička Vladimír	Commission for defence of DrSc. dissertations in Chemical Physics	member	1.1.1998-
Garaj Ivan	Technical commission TK71 Applications of statistical methods in quality control	member	1.1.2003
Garaj Ivan	Committee of Slovak Statistical and Demographic Society	member	1.1.2000
Kolesárová Anna	Slovak Society for Mathematicians and Physicists	member	1974-
Kolesárová Anna	Editorial Board of Tatra Mountains Math. Publ.	member	1998
Šabo Michal	Slovak Society for Mathematicians and Physicists	member	1968-
Pospíchal Jiří	Slovak Computer Science Society	member	1.1.1996-
Pospíchal Jiří	Slovak Artificial Science Society	member	29.8.2000-
Antoni Jozef	Slovak Society for Mathematicians and Physicists	member	1968-
Baláž Vladimír	Slovak Society for Mathematicians and Physicists	member	1978-
Jasem Milan	Slovak Society for Mathematicians and Physicists	member	1978-
Varga Štefan	Slovak Society for Mathematicians and Physicists	member	1968-

Name	Organisation or Society	Position	Valid date
Horanská Ľubomíra	Slovak Society for Mathematicians and Physicists	member	1993-

D. Membership in International Organisations and Societies

Name	Organisation or Society	Position	Valid date
Kvasnička Vladimír	MATCH Communications in Mathematical Chemistry	member of advisory board	1.1.1998-
Kvasnička Vladimír	Neural Network World	member of advisory board	1.1.2001-
Kvasnička Vladimír	Croatica Chimica Acta	member of advisory board	1.1.2002-
Kolesárová Anna	European Society for Fuzzy Logic and Technology (EUSFLAT)	member	1998-
Šabo Michal	European Society for Fuzzy Logic and Technology (EUSFLAT)	member	1998-
Šabo Michal	SEFI - Mathematical Working Group	member	1994-
Pospíchal Jiří	EURO Working group on fuzzy sets (EUROFUSE) (http://allserv.rug.ac.be/~bdebaets/members.html#SlovakRepublic)	member	1999-

F. Visits of Staff Members and Postgraduate Students in Foreign Institutions

Name	Organisation / Institution / Conference	State	Date / Duration
Kolesárová Anna	Széchenyi István University, Győr	Hungary	15.6. - 2.7. 2004
Kolesárová Anna	J. Kepler University, Linz	Austria	2. - 20. 2. 2004
Kolesárová Anna	COST Action 274 Meeting, Techn. Univ. of Tampere	Finland	9. - 13. 6. 2004
Kolesárová Anna	2nd Int. Conf. on Soft Methods in Probability and Statistics, University of Oviedo	Spain	2. - 4. 9. 2004
Kolesárová Anna	Int. Conf. 8th Fuzzy Days in Dortmund	Germany	30. 9. - 3. 10. 2004
Vladimír Baláž	University J. Monnet, Saint-Etienne	France	16. 6. - 14.7. 2004
Milan Jasem	Int. Conf. Summer School on general algebra and ordered sets	Czech Republic	5. - 11. 9. 2004
Vladimír Baláž	University J. Monnet, Saint Etienne	France	27. 6. - 6. 10. 2004
Babinec Štefan	4.ČS-S Seminár: Kognice a umělý život IV.	Czech Republic	26. - 30.5. 2004
Babjak Jozef	4.ČS-S Seminár: Kognice a umělý život IV.	Czech Republic	26. - 30.5. 2004
Babjak Jozef	Int. Conference Mendel'2004, University Brno	Czech Republic	16. 6. - 18. 6. 2004

VII. THESES AND DISSERTATIONS

A. Graduate Theses (Bc Degree) for state examinations after three years of study

Name	Title of Thesis	Supervisor
Kovalčík Boris	Fuzzy modelling and fuzzy control of chemical processes	Kolesárová Anna
Král Matúš	Optimization methods and their application in chemistry	Boor Štefan
Pigoš Ján	Predictions in non-parametric regression models	Varga Štefan

B. Graduate Theses (MS Degree) for state examinations after five years of study

Name	Title of Thesis	Supervisor
Drahoš Miroslav	A dependence of efficiency of fuzzy control on applied inference method	Šabo Michal
Grančík Peter	An application of genetic programming for prediction of physico-chemical molecular properties	Pospíchal Jiří
Kováčová Katarína	An application of genetic algorithm to design of molecules with required topological indices	Pospíchal Jiří
Paulovič Michal	Molecular evolution in silico	Kvasnička Vladimír

Name	Title of Thesis	Supervisor
Zelisková Dagmar	An evolutionary algorithm for reconstruction of DNA molecules	Kvasnička Vladimír

VIII. PUBLICATIONS

Books, Chapters in monographs

- [1] Garaj, I., Janiga, I.: Two sided tolerance limits of normal distributions with unknown means and unknown common variability. Vydavateľstvo STU v Bratislave, 218 strán, ISBN 80-227-2019-4.
- [2] Kolesárová, A., Kováčová, M.: Fuzzy Sets and Their Applications. Vydavateľstvo STU v Bratislave, 2004, 160 strán. ISBN 80-227-2036-4.
- [3] Kolesárová, A., Kováčová, M., Záhonová, V.: Mathematics I Vydavateľstvo STU v Bratislave, 2004, 152 strán. ISBN 80-227-2083-6.

CC publications

- [1] Kolesárová, A., Mordelová, J., Muel, E.E.: Kernel aggregation operators and their marginals. Fuzzy Sets and Systems 142 (2004) 35-50.

Publications registered in CA, FSTA and other ISI databases

- [1] Jasem, M.: On intrinsic quasimetrics – preserving maps on non-abelian partially ordered groups. Math. Slovaca 54 (2004) 225-228.

Other publications

- [1] Garaj, I., Janiga, I., Cisko, P.: Estimation of minimum detectable value by using linear calibration with constant deviation. Forum Metricum Slovaca VIII, Bratislava 2004, pp. 68-75, ISBN 80-88946-23-9.
- [2] Garaj, I., Janiga, I., Cisko, P.: Estimation of minimum detectable value by using linear calibration with standard deviation linearly dependent on net state variable. Forum Metricum Slovaca VIII, Bratislava 2004, pp. 60-67, ISBN 80-88946-23-9.
- [3] Garaj, I., Janiga, I.: Two sided tolerance limits of normal distributions with unknown means and unknown common variability. Forum Metricum Slovaca VIII, Bratislava 2004, pp. 51-59, ISBN 80-88946-23-9.

Lectures and posters

- [1] Babjak, J.*: A biological model optimized by new strategies of SOMA. In: Medz. konf. ISCAM' 2004- bez zborníka. Abstracts ISCAM' 2004, Bratislava, 2004.(Pr)
- [2] Jasem, M.*: Study of plasma modification properties of PET reinforcing materials In: Medz. konf. Summer School on General Algebra and Ordered Sets 2004, Jesenniky, Česko, september 2004 - bez zborníka. (Pr)
- [3] Kolesárová, A.*, Mordelová, J. : Quasi-copulas as a class of 1-Lipschitz aggregation operators. In: Medz. konf. FSTA' 2004- bez zborníka. Abstracts FSTA'2004, Lipt. Ján, Február 2004, p. 73. (Pr)
- [4] Šabo M. *, Strežo P.: On some constructions of fuzzy preference structures. In: Medz. konf. FSTA' 2004- bez zborníka. Abstracts FSTA'2004, Lipt. Ján, Február 2004, p. 96. (Pr)

Text books

- [1] Reháková, M., Vizárová, K.*, Jančiová, D., Valovičová, M., Varga, Š.: Preselection of historical books in the process of their stabilization. In: Proc. Int. Conf. Durability of paper and writing, Ljubljana, november 2004, pp. 47-48.(Pr)
- [2] Babinec, Š., Pospíchal J.*: Optimization in Echo state neural networks by Metropolis algorithm. In: Proc. of 10th Internat. Conference on Soft Computing, Mendel'2004. VUT Brno Publishing, June 2004, pp. 155-160. ISBN 80-214-2676-4. (Pr)
- [3] Janiga, I.*, Cisko, P., Garaj, I.: Minimum detectable value from the linear calibration. In: Zborník medz. Konf. Strojné inžinierstvo 2004, Bratislava, November 2004, pp. S1-52-S1-63. ISBN 80-227-2105-0. (Pr)
- [4] Klement, E.P., Kolesárová, A.* : 1-Lipschitz aggregation operators, quasi-copulas and copulas with given diagonal section. In: Soft Methodology and Random Information Systems. Series Advanced in Soft Computing. Spriger, Berlin-Heidelberg, 2004, pp. 205-211. ISSN 1434-9922. (Pr)
- [5] Klement, E.P., Kolesárová, A.* : 1-Lipschitz aggregation operators, quasi-copulas and copulas with given opposite diagonal section. In: Proc. of Int. Conference 8th Fuzzy Days, Dortmund, Nemecko, October 2004, 7pages, CD-ROM. (Pr)
- [6] Kolesárová, A.*: A characterization and composition of quasi-copulas. In: Proc. 25th Linz Seminar on Fuzzy Set Theory - Mathematics of Fuzzy Systems. Linz, Austria, February 2004, pp. 83-90. (Pr)
- [7] Babinec, Š.*, Pospíchal J. : Optimization in Echo state neural networks by Metropolis algorithm. In: Zborník čes.-slov seminára Kognice a umělý život, FPF SU Publishing, Opava, 2004, pp. 35-44. ISBN 80-7248-232-7. (Pr)

- [8] Babjak, J.*; Palko M.: Simulator of colony of seaweeds tuned by optimizing algorithm SOMA. In: Zborník čes.-slov seminára Kognice a umělý život., FPF SU Publishing, Opava, 2004, pp. 45-54. ISBN 80-7248-232-7. (Pr)
- [9] Garaj, I.*; Janiga, I.: One sided tolerance factors of normal distribution with high reliability coefficient. In: Zborník 12. konf. Štatistickej spoločnosti Štatistika a integrácia, Bardejov, 2004, pp. 228-236. ISBN 80-88946-37-9. (Pr)
- [10] Varga, Š.*: Classical regression models versus fuzzy regression models. In: Zborník konf. PRASTAN' 2004, Kočovce, máj 2004, pp. 109-115. ISBN 80-88946-36-0. (Pr)
- [11] Varga, Š.*: Nonparametric regression and smoothing. In: Zborník konf. PRASTAN' 2004, Kočovce, máj 2004, pp. 105-108. ISBN 80-88946-36-0. (Pr)

Grants

- [1] Kolesárová, A., Doc. RNDr. CSc. (hlavný riešiteľ : Dobráková J., Doc. RNDr. CSc., SĽF STU), riešitelia na FCHPT: Kolesárová A., Doc. RNDr. CSc., Mathematics on line: Internet course. KEGA 3/100603 (FCHPT: 529)
- [2] Kolesárová, A., Doc. RNDr. CSc., riešitelia na FCHPT: Šabo M., Doc.RNDr.CSc.; Varga Š., Doc.RNDr. CSc.; Sarkoci P., Ing. Mathematical vague information processing and its applications. VEGA 1/0085/03 (FCHPT: 992)
- [3] Kolesárová, A., Doc. RNDr. CSc., riešitelia na FCHPT: Šabo M., Doc.RNDr.CSc.; Varga Š., Doc.RNDr. CSc.; Sarkoci P., Ing. TARSKI : Theory and Applications of Relational Structures as Knowledge Instruments. MVTP, COST 274 (FCHPT: 626)
- [4] Kvasnička, V., Ing. DrSc., riešitelia na FCHPT: Baláž V., Doc.RNDr, CSc.; Sarkoci P., Ing; Babjak J., Ing; Boor Š., RNDr., Bánki J., RNDr. Ing. CSc. Artificial chemistry and molecular evolution in silico. Grant. VEGA 1/0062/03 (FCHPT 941)
- [5] Pospíchal J., Doc.RNDr. DrSc., riešitelia na FCHPT: Šabo M., Doc.RNDr.CSc.; Varga Š., Doc.RNDr. CSc.; Baláž V., Doc.RNDr. CSc.; Babinec Š., Ing; Boor Š., RNDr., Sarkoci P., Ing. Echo state neural networks. Grant. VEGA 1/1047/04 (FCHPT: 979)

DEPARTMENT OF NUTRITION AND FOOD ASSESSMENT

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I. STAFF

Full Professors:

Alexander Príbela, DrSC.

Associate Professors:

Vladimír Frank, PhD.; Mária Takáčsová, PhD.; Ľubomír Valík, PhD.

Assistant Professors :

Eva Hybenová, PhD; Mária Kováčová, PhD; Denisa Lauková, PhD.

Research Fellows:

Ľadislav Dodok, Assoc. Prof., PhD.; Bernadette Hozová, PhD; Kitti Németh, PhD.; Anna Mikulajová, MSc.; Soňa Škrovánková, MSc.; Silvia Vojteková, MSc.

PhD Students:

Lucia Brindzová, MSc.; Chovancová Anna, Mgr., Iveta Együdová, MSc.; Alena Gajdošová, Mgr.; Michaela Kokindová, Mgr.; Katarína Mériová, MSc.; Peter Polka, MSc.

Technical staff:

Žofia Fórová; Edita Kovačičová; Eva Vosátková

II. TEACHING AND RESEARCH LABORATORIES

A. Teaching laboratories:

Laboratory of Food Microbiology and Hygiene
Laboratory of Food Analysis and Assessment

B. Research laboratories:

Laboratory of Food Microbiology and Hygiene
Laboratory of Food Analysis and Assessment
Laboratory of Food Chemistry

III. TEACHING

A. Undergraduate Study:

1. semester (Bc)	Food Chemistry I.	(2 h)	Takáčsová
1. semester (Bc)	Food Analysis	(2 h)	Kováčová
	Laboratory of Food Analysis	(4 h)	Kováčová, Hozová, Škrovánková, Frank, Mikulajová
	Semestral Project	(0-4 h)	All Department Staff
1. semester (Bc)	Food Microbiology	(2 h)	Valík
	Laboratory of Food Microbiology	(3 h)	Valík, Hozová, Lauková
	Food Additives and Contaminants	(2-0 h)	Hybenová
	Laboratory Practice Food Additives and Contaminants	(0-2 h)	Hybenová
1. semester (Bc)	Physiology and Pathophysiology of Human Nutrition	(2-2 h)	Kajaba
	Semestral Project I.	(0-5 h)	All Department Staff
	Comodity Marketing	(2-2 h)	Lacková, Karkalíková
1. semester (Bc)	Food Hygiene	(2-1 h)	Valík
	Food Chemistry II.	(2 h)	Takáčsová
	Diethology	(2 h)	Kajaba
	Semestral Project II.	(0-5 h)	All Department Staff
1. semester (Bc)	Laboratory of Food Chemistry II	(1 h)	Takáčsová

	Food Analysis II.	(2 h)	Prachár
	Laboratory of Food Analysis II	(4 h)	Hozová, Hybenová, Kováčová, Valík, Jakubík
	Food Toxicology	(2 h)	Piecková
1. semester (Bc)	Laboratory Practices	(0-4 h)	All Department Staff
1. semester (Bc)	Food Additives and Contaminants	(0-2 h)	Hybenová
	Food Evaluation	(2 h)	Žúbor
	Laboratory of Food Evaluation	(0-2 h)	Škrovánková, Brindzová, Vojteková, Lauková
	Laboratory Practice Food Additives and Contaminants	(0-2 h)	Hybenová
1. semester (Bc)			
	Semestral Project III.	(0-5 h)	All Department Staff
	Food Legislative	(2 h)	Kováč
	Industry production of ready-to eat meal	(2 h)	Mráz
1. semester (Bc)	Diploma Project	(0-27 h)	All Department staff
1. semester (Bc)			

IV. CURRENT RESEARCH PROJECTS

A. Governmental project 2003 SP 27/028 0E 02/028 0E 02 Quality, safety and functionality of primary food resources“ (E. Hybenová)

The project is coordinated by Research Institute of Plant Production where some tasks of the project are carried out in our Faculty. Objectives of these tasks are focused on a) Enhancement of nutritional value of various types of cereals, b) Evaluation and selection of primary food resources and preparation of functional foods with preventive-medical properties.

Project duration: from 2003 to 2005

B. COMmon dataBASE on microbial responses to food environments (Institute of Food Research Norwich, UK, www.combase.cc; e-ComBase Supporting Institutes: STU Bratislava - Ľ. Valík)

Important advances to develop such a database structure were made by the Institute of Food Research (IFR, Norwich, UK) in the 90's. The IFR database format is utilised in a project, called ComBase, being jointly run by the U.S. Department of Agriculture - Agricultural Research Service (USDA/ARS), Institute of Food Research (IFR) and Food Standard Agency of the UK (FSA). ComBase will store the raw data of the USDA Pathogen Modeling Programme, which is one of the largest databases of its kind. FSA is supporting ComBase by releasing data and computer programs developed at IFR and funded by the FSA. The project has attracted the interest of many universities and industrial partners. Some of them (first of all University of Complutense Madrid, UCM) has already submitted large amount of suitable data to ComBase.

Project duration: from 2002 to 2004

D. Processes and factors affecting durability and safety of food and household chemistry (VEGA 1/9132/02; Š. Schmidt, KPT FCHPT; Ľ. Valík, KVHP FCHPT)
Use of principles of predictive microbiology in the evaluation of hygienic safety of food. Mathematical modeling of growth of hygienically relevant microorganisms in model systems, in food and in emulsion systems. Prediction of durability, and dynamics of microbial deterioration of foods.

Project duration: from 2002 to 2004

E. Development of Good Hygiene Practices in the Slovak Food Industry; Development of the standard for codes to hygiene practice (STOAS Netherlands and Ministry of Agriculture of the SR; Ľ. Valík - national expert for Bryndza cheese)

The Netherlands and Slovak task force will develop a standard approach for the development, implementation and verification of codes to hygiene practice. The standard approach must be based on best practices from the Netherlands and/or from other EU sources. The standard approach must include all principles of HACCP according to Codex Alimentarius, the documentation on the hazard and risk analyses for future reference and a general structure according which to develop common codes to hygiene practice. The standard approach must be approved by the official inspection institutes (task international consultants (I.C.): initially a workshop should be held to train task force members and to develop a common understanding of (content and budget is task of I.C., organisation is task of T.L.); the background of food safety including legislation, hygiene, food safety hazards, historical and future food safety developments in the international food market; the principles of HACCP and the approach to risk analyses; the development, implementation and verification of HACCP-systems and hygiene codes; the programs, methods and material to train the workforce on good hygiene practice in relation to HACCP systems and hygiene codes. A course was made on the developed approach, methods and techniques to be able to train project teams, which undertake to develop specific codes. This course will include the development-, the implementation- and the verification phase. Subjects were:- legislation; food safety hazards determination; risk assessment; control measures; documentation; validation; verification and registration (task of I.C.).

Project duration: from 2003 to 2004

F. National project 2003 SP 27/028 0E 01/028 0E 01 Quality, safety and functionality of primary food resources (Ľ. Valík, D. Lauková).

The project is coordinated by Food Research Institute Bratislava. The task on "Study of the influence environmental factors on behaviour of technological and health relevant microflora in foods and food production areas" is also carried out at the Department of Nutrition and Food Evaluation. Principles of predictive microbiology within evaluation of food safety were used. Mathematical modelling of growth of relevant microorganisms in model systems, in food and in emulsion was worked out. Prediction of shelf-life and dynamics of microbial deterioration of foods was studied. Influence of external and internal environmental determinants on food micro flora.

Project duration: from 2003 to 2005

G. Development, optimising and control of new food products with the aim to increase the food quality using biological active substances and modern technologies (Alexander Dandár, Vladimír Frank)

Research activity was focused on selection, analysis and utilization of antioxidants of natural sources namely of plant origin, applied in edible plant oil. Antioxidative activity of ethanol extracts from oil seeds /corn, amaranth, soy, rapeseed, and cultivated flax/ as well as from legumes /pea, lens, bean, chickpea, French bean/ was studied. Positive antioxidant effects on lipid stability were established e.g. in the samples of heat-treated pork with lens. Antioxidative activity of ethanol extracts of some spices as green and black tea and coffee drinks. Volatile compounds of silica and the extracts from selected herbs and teas as well as its sensory properties were analysed too. Chemical parameters of sensory properties of fermented natural juices /cabbage, celery and beetroot/ were evaluated. Effect of NaCl content and an initial pH value as well as the effect of bacteria on biogenic amines and organic acids production were observed in evaluated juice samples. Decrease of vitamins B in heat-treated confectionery samples within an optimizing of technology was studied. Soy flavonoids / genistein, daidzein and their glukozides / in term of their antioxidative properties were studied. The influence of polyphosphate content on sensory and physico-chemical properties in selected meat products was observed. Nutritive parameters as well as the additives, mainly amino acids composition were analysed. An effect of lactic acid addition applied on the surface of butcher's meat with the aim to extend its shelf life was evaluated.

Project duration: from 2002 to 2004

H. Processes and factors influencing safety and shelf-life of foodstuffs (Schmidt, Š., Valík, Ľ.)

Mathematical analysis of growth and mutual relationships among microorganisms determining food safety in model experiments with the aim to describe their growth dynamics in connection with food intrinsic, extrinsic or technological factors. Mathematical analysis of growth and relations among microorganisms relevant from hygiene and technological point of view.

Project duration: from 2002 to 2004

V. CURRENT EDUCATION PROJECTS

A. Nutrition and health in training and education - M. Takáčsová; V. Frank

Preparation of variable training and educational moduls for various groups. Preparation of conceptual framework and subjects for whole-life education in nutrition, health and food safety in cooperation with the EAEA - European Association for the Education of Adults (<http://www.eaea.org/slovak/eaea.html>) and Institute of whole-life education at Slovak University of Technology (<http://www.stuba.sk/svk1/icv/slovak.html>). Establishing of the Educational centre STU in co-operation with College of Education of the Tmava university. Development of programmes for pre-school and school nutrition recommendations.

Project duration: from 2003 to 2005

B. Implementation of the BSP Food Safety Action (FSA); CIAA and Food Chamber of Slovakia (Ľ. Valík - national expert)

The experts have been provided with a well crafted methodology to carry out their job and have been provided with specific tools to achieve the expected results. Monitoring of the activities and evaluation of the results - by CIAA and the E. C. - was done according to the scheme provided: there is no place for "creative" interpretation or reporting.

Project duration: from 2003 to 2004

VI. COOPERATION

A. Cooperation in Slovakia

Institution	Type of cooperation	Responsible person	Duration
Adivit Nitra	Experimental and consult. projects	E. Šturdík, E. Hybenová, M. Kováčová, L. Dodok, B. Hozová, Ľ. Valík	31.01.2004
Pečivárne Liptovský Hrádok	Consultations	L.Dodok	31.01.2004
Institute of Food Research	Experimental project	Ľ. Valík	01.09.2003-
Agrifood , accredited testing laboratory s.r.o., Prievidza	Microbiological analysis	V. Frank	1998-
Research Institute of Plant Production	Cooperation on governmental project "Quality, safety and functionality of primary food resources"	E. Šturdík, E. Hybenová	01.09.2003-
Adivit Nitra	Experimental project	E. Hybenová	31.01.2004
Adivit Nitra	Experimental project	L. Dodok	31.01.2004
Food Chamber of Slovakia	Consultation project	Ľ. Valík	2004
Slovak Chamber of Agriculture and Food	Consultation project	Ľ.Valík	2004
Institute of Preventive and Clinical Medicine	Experimental project	E. Šturdík	2004
Research Institute of Drugs, Modra	Experimental and consultation project	E. Šturdík	2003

B. International Cooperation

Institution	Type of cooperation	Responsible person	Duration
Institute of Food Research	Support for database on predictive food microbiology	Ľ. Valík, K. Németh	2002-
STOAS Netherlands	Consultancy and experimental in hygiene and HACCP	Ľ. Valík	2003-
CIAA Brussels	Expert's cooperation	Ľ. Valík	01.12.2003-

C. Membership in Domestic Organizations and Societies

Name	Organisation or Society	Position	Valid date
B. Hozová	Expert of the Slovak National Accreditation Service – Technical Commission TVA-L4	member	
E. Hybenová	Member of Committee of the Food Section SCHS	member	
V. Frank, B. Hozová	Slovak Chemical Society (SCHS)	member	
E. Hybenová	Slovak Society of Forestry, Agricultural, Food and Veterinary Sciences at Slovak Academy of Sciences	member	
K. Németh	Slovak Society of Forestry, Agricultural, Food and Veterinary Sciences at Slovak Academy of Sciences, Bratislava	member	
A. Mikulajova	Slovak Society of Forestry, Agricultural, Food and Veterinary Sciences at Slovak Academy of Sciences, Bratislava	member	
S. Škrovánková	Slovak Society of Forestry, Agricultural, Food and Veterinary Sciences at Slovak Academy of Sciences	member	
V. Frank, E. Šturdík	Slovak Society of Forestry, Agricultural, Food and Veterinary Sciences at Slovak Academy of Sciences	member	1995
E. Šturdík	Scientific board of the Institute of Preventive and Clinical Medicine	member	2003
E. Šturdík	Scientific board of the Chemical Institute of the Slovak Academy of Science	member	2003
E. Šturdík	Academic board of the Slovak Nuclear Society	member	2003
E. Šturdík	Scientific board of the UCM University Trnava	member	2003
E. Šturdík	Editorial Board of the Bulletin of Food Research	member	2003
M. Takácsová	Editorial Board- Czech Journal of Food Sciences	member	2003
L. Dodok	Slovak Society of Forestry, Agricultural, Food and Veterinary Sciences at Slovak Academy of Sciences	member	1995
L. Dodok	SUTN Bratislava	member	1990
K. Németh	Journal "Výživa a zdravie" (Nutrition and Health)	secretary	2004
S. Vojteková	Slovak Society of Forestry, Agricultural, Food and Veterinary Sciences at Slovak Academy of Sciences	member	2002
E. Šturdík	Editorial Board of the journal "Nutrition and Health"	chairman	2004
E. Šturdík	Editorial Board of the Nova Biotechnologica	member	2001

D. Membership in International Organisations and Societies

Name	Organisation or Society	Position	Valid date
B. Hozová, V. Frank, Ľ. Valík	Czechoslovak Society for Microbiology	member	

E. Visitors from abroad

Name	Organisation or Institution	State	Date / Duration
Kees Sonneveld	STOAS Wageningen, Netherlands	NED	2004/1 day
Dr. Mariusz K. Piskula	Polish Academy of Sciences, Olsztyn, Poland	PL	March 2004 (2 days)
Dr. Roger Fenwick	IFR, Norwich, UK	October 2004 (4 days)	October 2004 (4 days)

F. Visits of Staff Members and Postgraduate Students in Foreign Institutions

Name	Organisation / Institution / Conference	State	Date / Duration
Ľ. Valík	University of Chemical Technology, Prague	CZ	January 2003 (2 days)
Ľ. Valík	The Croatian Microbiological Society/3rd Croatian Congress of Microbiology with International Participation	HR	October 4-7 (4 days)
K. Németh	Institute of Food Research, Norwich	Poland	June, July 2004 (5 weeks)
D. Lauková	University of Chemical Technology, Prague	CZ	January 2004 (2 days)

Name	Organisation / Institution / Conference	State	Date / Duration
K. Németh	Budapest University of Technology and Economics, Budapest, Hungary	HU	April 2004 (2 days)
K. Németh	Institute for Reference Materials and Measurements, Joint Research Centre, Geel, Belgium	B	November 2004 (2 days)
Ľ. Valík	CIAA Workshop, Prague	CZ	January 2004 (5 days)

VII. THESES AND DISSERTATIONS

A. Graduate Theses (Bc Degree) for state examinations after three years of study

Name	Title of Thesis	Supervisor
M. Kunštek	Vitamin B12 content in foods	E. Hybenová
Z. Karácsonyová	Thiamine in foods	E. Hybenová
A. Medveďová	Water activity of chosen market foods	Ľ. Valík
M. Michalcová	Production of sheep lump chese	Ľ. Valík
M. Repašská	Folic acid in foods and its content in human nutrition	E. Hybenová
M. Škultétyová	Metabolism of flavonoids in living structures	S. Vojteková
N. Bordash	The relations between aditives and healthy nutrition requirements	V. Frank

B. Graduate Theses (MS Degree) for state examinations after five years of study

Name	Title of Thesis	Supervisor
Katarína Búranová	Study of the Flavonoid Stability from Buckwheat under Different Domestic Processing, and Effect of Temperature and pH.	S. Vojteková
Timea Gieroňová	Composition and antioxidant properties of cereals	A. Mikulajová
Beáta Kelemenová	Potential utilization of β -glucans in enhacement quality of food products	B. Hozová
Denisa Knapčíková	Effect of storage conditions on microbiological quality of selected foods	V. Frank
Judita Kobzová	Effects of natural antioxidants on formation of oxidative products	M. Takácsová
Emília Krulíková	Study of probiotic properties of lactobacilli	E. Hybenová
Peter Polka	Growth analysis of selected bacteria in model environment	Ľ. Valík
Gabriela Rambousková	Isolation, utilization and health aspects of polyphenols of the hulls from cacao beans	M. Kováčová
Lucia Segiňová	Effect of free lipid radicals on food quality and their prevetion by natural compounds	M. Takácsová

C. Dissertations (PhD)

Name	Title of Thesis	Supervisor
Brindzová L.	Free radicals formation, prevention by natural oat antioxidants and their effect on human health	M. Takácsová
Kukurová I.	Interactions of antibiotics in milk in the determination of detection limits.	B. Hozová
Mériová K.	Development of plant nutraceuticals for prentive medical purpose	E. Šturdík
Petriková J.	Quantitative analysis of mutual relationships among microorganisms in foods.	Ľ. Valík
Együdová I.	Valuation and selection cereals for development foods with minimal contents unfavourable substances.	V. Frank
Gajdošová A.	Choice, evaluation and using of cereals for the preparation of functional food products with immunomodulating properties	B. Hozová
Mikulajová A.	Effect of addition of some raw materials and secondary raw materials on food lipids stability.	M. Takácsová
Škrovánková S.	Isolation and Identification of sensory effective natural Materials of Plant Origin	M. Takácsová
Vojteková S.	Study of flavonoids in term of stability and antioxidant effects in selected raw materials.	M. Takácsová
Ďuračíková A.	Development of rapid methods for the diagnostic of microorganisms.	B. Hozová
Polka P.	Research and development of cereals profitable for health with better nutrition and organoleptic atributes	L. Dodok

Name	Title of Thesis	Supervisor
Chovancová A.	Medical aspects of nutraceuticals	E. Šturdík

VIII. PUBLICATIONS

Books, Chapters in monographs

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DEPARTMENT OF ORGANIC CHEMISTRY

Head of Department:
Prof. Ľubor Fišera, PhD, DSc

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I. STAFF

Full Professors:

Prof. Ľubor Fišera, PhD, DSc; Prof. Tibor Gracza, PhD, DSc; Prof. Štefan Marchalín, PhD, DSc; Prof. Michal Uher, PhD, DSc (until 28. 02. 2004);

Associate Professors:

Dušan Berkeš, PhD; Ľubomír Floch, PhD; Viktor Milata, PhD; František Považanec, PhD; Štefan Stankovský, PhD; Katarína Špirková, PhD; Ladislav Štibrányi, PhD;

Assistant Professors :

Mária Bobošíková, PhD; Eva Jedlovská, PhD; Anna Koreňová, PhD; Angelika Lásiková PhD; Peter Szolcsányi PhD; Peter Šafař, PhD; Jarmila Štetinová, PhD (until 30. 06. 2004);

Research Fellows:

Matej Babjak; Iva Blanáriková-Hlobilová, PhD; Daniel Végh, PhD, DSc; Peter Zálupský, PhD; Jozefína Žúžiová, PhD;

PhD Students:

Barbora Baumlová; Petra Černuchová (until 30. 09. 2004); Branislav Dugovič (until 31. 3. 2004); Helena Horváthová (since 1. 10. 2004); Ľuba Hýrošová; Mária Gardiánová; Pavol Jakubec; Peter Kapitán; Peter Kooš; Martin Petro (since 1. 10. 2004); Zita Puterová; Tomáš Wiesenganger (since 1. 10. 2004); Dagmar Winklerová (since 1. 10. 2004);

Technical staff:

Miroslava Caňová; Eva Kaisová; Mária Nemcová; Anton Pavlíček; Stanislav Tomek; Iva Viskupičová; Andrea Volentičová (until 30. 06. 2004);

II. TEACHING AND RESEARCH LABORATORIES

A. Teaching laboratories:

Basic Skills in Organic Chemistry Laboratory I, II.

B. Research laboratories:

Laboratory of Organic Synthesis Reactions
Laboratory of Chiral Cycloaddition
Laboratory of Heterocyclic Chemistry
Laboratory of Stereoselective Synthesis
Laboratory of Applied Organic Synthesis
Laboratory of Natural Compounds
Laboratory of Nuclear Magnetic Resonance Spectroscopy
Laboratory of IR and UV Spectroscopy
Laboratory of Gas Chromatography

III. TEACHING

A. Undergraduate Study:

1. semester (Bc)	General and Organic Chemistry	3/1/0	Považanec
1. semester (Bc)	Organic Chemistry	2/2/0	Marchalín, Gracza
	Organic Chemistry Laboratory	0/0/4	all teachers and research workers
1. semester (Bc)	Organic Chemistry	2/2/0	Fišera, Považanec
	Organic Chemistry Laboratory	0/0/4	all teachers and research workers
1. semester (Bc) (Pt)	Organic Chemistry	1/1/0	Špirková, Floch

	Organic Chemistry Laboratory	0/0/4	Špirková, Floch, Stankovský, Jakubec, Wiesenganger, Winklerová
1. semester (Bc) (Pt)	Organic Chemistry	1/1/0	Špirková
	Organic Chemistry Laboratory	0/0/4	Špirková, Jakubec, Kapitán
1. semester (Bc)	Chemical Information	1/1/0	Zálupský, Babjak, Kooš
1. semester (Bc)	Chemical Specialities	2/2/0	Mravec, Štibrányi
	Semestral Project	0/0/4	Berkeš, Bobošíková, Fišera, Gracza, Milata, Považanec, Šafař, Végh
1. semester (Bc)	Organometallic Compounds	1/1/0	Gracza
	Mechanisms of Organic Reactions I	3/1/0	Fišera
	Bioorganic Chemistry	2/0/0	Berkeš
	Laboratory Project I	0/0/1 0	Šafař
1. semester (Bc)	Organic Chemistry III	1/1/0	Považanec
1. semester (Bc)	Organic Synthesis	2/1/0	Floch
	Asymmetric Synthesis	2/1/0	Gracza
	Stereochemistry	0/2/0	Štibrányi
	Spectroscopic Methods in the Control of Technology	2/2/0	Milata, Segla
1. semester (Bc)	Laboratory Project II	0/0/6	Šafař, Štibrányi
	Training at Industrial Production Floor	15 d	Végh, Gracza
1. semester (Bc)	Mechanisms of Organic Reactions II	1/1/0	Marchalín
	Applied Organic Synthesis	1/1/0	Považanec
	Physical Organic Chemistry I	0/2/0	Milata
	Chemistry of Heterocyclic Compounds	2/0/0	Stankovský
	Chemistry of Natural Substances and Drugs	2/0/0	Berkeš
	Chemical Information Systems	2/0/0	Zálupský
1. semester (Bc)	Laboratory Project	0/0/1 0	Végh, Gracza
1. semester (Bc)	Diploma Seminar		Považanec
	Diploma Thesis Project		Berkeš, Fišera, Považanec, Šafař

C. Doctoral Study:

1. semester (PhD)	Advanced Organic Chemistry	1/0/0	Gracza
1. semester (PhD)	Advanced Stereochemistry	1/0/0	Fišera
1. semester (PhD)	Structure Reactivity Relationship	1/0/0	Marchalín
1. semester (PhD)	New Trends in Organic Synthesis	1/0/0	Végh

IV. CURRENT RESEARCH PROJECTS

VEGA project No 1/0057/2003 The Application of Stereoselective Cycloaddition, Cyclization and Oxycarbonylation Reactions in the Total Syntheses of Natural Products and Its Analogues (Lubor Fišera)

The syntheses of natural products and their analogues, especially polyhydroxylated derivatives of pyrrolidines, piperidines, pyrrolizidines and indolizidines via asymmetric palladium(II)-catalyzed oxy-/amino-/amidocarbonylation of unsaturated polyols and/or aminopolyols and 1,3-dipolar cycloaddition of nitrones. The study of the effect of substituent/Lewis acids to influence diastereoselectivity of nitrone cycloaddition reactions. Modeling and synthesis of chiral palladium(II)-complexes for kinetic resolution of racemic mixtures in Pd(II)-catalyzed cyclization and carbonylation reactions of unsaturated polyols and aminopolyols. The application of these reactions as a key step in the total asymmetric synthesis.

Project duration: from 01.01.2003 to 31.12.2005

APVT project No 20-010702 Synthesis of optically pure building blocks for syntheses of biologically active natural compounds and their analogues as potential chemotherapeutics (Tibor Gracza)

Development and optimization of new synthetic ways - chiral pool approaches - in the syntheses of optically pure alkenitols derived from cheap and commercially available monosaccharides in laboratory grams and multigrams scale. Study of chemo-, regio- and stereoselectivity of palladium(II)-catalyzed oxy-/amino-/amidocarbonylation and cyclization of unsaturated polyols and aminopolyols. Evolution of asymmetric version of the transformations using chiral palladium(II)-complexes. The study of stereoselectivity of 1,3-dipolar cycloaddition of nitrile oxides and nitrones with chiral alkenes. The study of the effect of substituent/Lewis acids to influence the diastereoselectivity of the cycloadditions. The new type of cross-coupling reaction with contributing neighbouring group and finding of the reaction conditions for kinetic resolution of racemic polyols and aminopolyols.

Project duration: from 01.10.2002 to 30.09.2005

VEGA project No 1/9249/02 Stereoselective syntheses, reactivity and properties of hydroxylated indolizidines and substituted indolizines (Štefan Marchalín)

Basic research in the chemistry of heterocyclic compounds, in organic synthesis aiming at elucidation of structure of products and of reaction mechanisms, as well as at search for novel synthetic procedures. The objective of this project is to develop new general synthetic methodologies for the synthesis of diastereo- and enantiopure polyhydroxyindolizidines, dihydroindolizines and tricyclic heterocycles with 1,4-dihydropyridine ring. The project is divided in two parts. All parts of project are synergistically connected and leverage each other. The first part explores new synthetic approach for the synthesis of chiral polyhydroxylated indolizidines starting from enantiopure tetrahydrohetero[f]indolizinediones. The second part is based on our previous research in the chemistry of 1,4-dihydropyridines and is focused in the utilization of easily obtainable 2-formyl-1,4-dihydropyridines for the preparation of new chiral dihydroindolizines and tricyclic heterocycles containing 1,4-dihydropyridine ring by means of diastereoselective intramolecular cyclization reactions.

Project duration: from 01.01.2002 to 31.12.2004

VEGA project No 1/0058/03 Benzazines and Their Condensed Analogues; Preparation, Properties and Utilisation (Štefan Stankovský)

The objective of the proposed research project lies in preparation of novel condensed aromatic heterocycles – derivatives of benzazines mainly of the quinazoline and quinoline type fused with another ring containing O, S, N as heteroatoms. Special attention will be paid to use of non-traditional precursors leading to desired skeletons carrying desired functionality, or such that allow to preserve the original skeleton and introduce desired substituents. Such modifications are expected to streamline structures of target compounds to achieve significant bioactivity, mainly antimicrobial, antifungal and cytostatic. Structural and spectral characteristics of novel compounds will be studied, including the x-ray analysis and study of supramolecular parameters by computational methods.

Project duration: from 01.01.2003 to 31.12.2005

VEGA project No 1/1379/04 Syntheses directed towards novel heterocyclic compounds such that show opto-electronic properties, specific bioactivity, and apoptosis (Daniel Végh)

Design of syntheses of novel compounds supported by modern trends gleaned from theoretical studies. Synthesis of novel heterocyclic compounds from the furan, thiophene, pyrrole, imidazole, pyrazine, - and - pyrone series a modeling of their biological activity. Study of controlled di- and trimerization of the prepared - conjugated heterocyclic compounds aiming at preparation of molecular and supramolecular functional units and nano-structures. Modeling of supramolecular structures and potential -conjugated antennae systems for molecular recognition and self-organization by theoretical calculations a combination of building blocks. Utilization of perfluoroaromatics for molecular recognition. Structure modeling of compounds with cancerostatic effects and those capable of initiating apoptosis.

Project duration: from 01.01.2004 to 31.12.2006

VEGA project No 1/9250/02 Crystallization-induced dynamic resolution in the synthesis of enantiomerically pure amino acids and their derivatives (Dušan Berkeš)

Conjugated addition of chiral amino derivatives on electron-deficient unsaturated carboxylic acids followed by crystallization-induced dynamic resolution of primary adducts as key steps in a methodology of asymmetric transformation leading to pure enantiomers. Also stereoselective transformations of prepared adducts, synthesis of optically pure hydroxyamino- and diaminocarboxylic acids.

Project duration: from 01.01.2002 to 31.12.2004

VEGA project No 1/9254/02 Preparation, properties and reactivity of the nitrogen heterocycles with fused ring containing O, S, Se or N atoms (Viktor Milata)

The preparation of new aromatic polyazaheterocycles on the basis of quinoline, quinazoline and benzoazoles with other fused aromatic or saturated heterocycle containing O, S, Se or N, is the subject of this proposed project. In the first period of this project the greatest attention will be aimed at the preparation of new precursors of the mentioned heterocycles. In the next part these precursors of nitroquinazolines, nitrobenzimidazoles, nitroselenodiazoles, imidoalogenides, cyanoacetamides, quinazolones and their thioanalogues will be used for the synthesis of the target compounds in the cyclization and cyclocondensation reactions. Derivatisation of the newly synthesized heterocycles by incorporation of saccharide or other hydrophilic component, an increased solubility of compounds in water and thus better biological application will be pursued. Attention will be given to physico-chemical and spectral parameters, e.g. X-Ray analysis and supramolecular chemistry will be confronted with calculated models.

Project duration: from 01.01.2002 to 31.12.2004

V. CURRENT EDUCATION PROJECTS

VI. COOPERATION

A. Cooperation in Slovakia

Institution	Type of cooperation	Responsible person	Duration
Synkola, Bratislava	Seminars and conferences	Karvaš Milan, director, Mlynská dolina, 842 15 Bratislava 4	01.01.1992-
Duslo, Šaľa	The synthesis of heterocyclic compounds.	Lehocký Peter, director, Duslo, a. s. 927 03 Šaľa	01.01.1990-
Slovak Academy of Sciences, Bratislava	The synthesis of heterocyclic compounds.	Hirsch Ján, director, Dubravská cesta 9, 841 04 Bratislava 4	01.01.1970
Slovak Academy of Sciences, Bratislava	The synthesis of heterocyclic compounds.	Šoltés Ladislav, UEF, Dubravská cesta 9, 841 04 Bratislava 4	01. 01.1997-
Tau-Chem, Bratislava	The synthesis of heterocyclic compounds.	Žvak Vladimír, director, Nobelova 34, 836 05 Bratislava 3	01.01.1996
Institute of Drugs Research, Modra	The synthesis of heterocyclic compounds.	Šmahovský Vendelín, director, Horná 36, 900 01 Modra	01.01.1980-
Tatra Trade, Prievidza	The synthesis of heterocyclic compounds.	Klínovský Ján, director, Matice slovenskej 10, 971 01 Prievidza	01.01.2000-
Institute of Preventive Medicines, Bratislava	The synthesis of heterocyclic compounds.	Sedlák Ján, Dr., Vlárská 1, 833 91 Bratislava 37	01.01.2000-
National Center of Onkology, Bratislava	The synthesis of heterocyclic compounds.	Chalupa Ivan, Dr, Vlárská 7, 831 01 Bratislava 37	01.01.2000-
Georganics, Bratislava	The synthesis of heterocyclic compounds.	Đuriš Juraj, director, Koreničova 1, 811 03 Bratislava 1	01.01.2000-
CMS, Bratislava	The synthesis of heterocyclic compounds.	Toman Jaromír, director, Nobelova 34, 836 03 Bratislava 3	01.01.2000-
Zentiva a.s., Hlohovec	Research and teaching	Jaroslav Chylik, API prod. manager, Nitrianska cesta 100, 920 27 Hlohovec	01.07.2003-

B. International Cooperation

Institution	Type of cooperation	Responsible person	Duration
Inst. für Angewandte Synthese Chemie TU Vienna, Austria	The synthesis of heterocyclic compounds	Fröhlich Hannes, dean, professor, Getreide Markt 9, A-1060 Vienna, Austria	01. 01. 1991-
Inst. für Organische Chemie Univ. Stuttgart, Germany	Stereoselective dipolar cycloaddition and oxycarbonylation reactions	Jäger Volker, professor, Pfaffenwaldring 55, D-70569 Stuttgart, Germany	01. 01. 1989-

Institution	Type of cooperation	Responsible person	Duration
Max Plank Institute, Stuttgart, Germany	The synthesis of heterocyclic compounds for nanotubes	Roth Siegmar, Dr., Helsenbergerstr. 1, D-70569 Stuttgart, Germany	01.01.2002-
Inst. für Organische Chemie Univ. Berlin, Germany	Stereoselective reactions of chiral nitrones	Reissig Hans-Ulrich, professor, Takustr. 3, D-14195 Berlin, Germany	01. 01. 2002-
Inst. de Chimie Moleculaire d'Orsay, France	Resau formation recherche	Basch E. H., professor, IUT d'Orsay Université de Paris-Sud (XI) Département Chimie Plateau du Moulon 91400 ORSAY, France	01.01.1976-
Institute de Chimie Moleculaire, Orsay, Univ. Paris-Sud, France	NMR study of chiral compounds and cooperation in exchange of students	Loupy, A. , professor, Institut of Molecular Chemistry, ICMO, University Paris – South, Orsay, France	01.01.2000-
URCOM, Univ. Le Havre, France	The synthesis of condensed heterocyclic compounds	DECROIX B., DAICH A., professors Laboratoire de Chimie URCOM, EA 3221 Faculté des Sciences et Techniques Université du Havre 25, r	01.01.1990
Inst. für Festkörperphysik der Univ. Vienna, Austria	New materials for microelectronics	Kauffmann H. F. professor, University of Vienna, Intitut fur Physikalische chemie, Währingerstrasse 42, Wien, Austria.	01.010.2001-
Laboratorium für Org. Chem, ETH, Zürich, Switzerland	The total synthesis of natural products	Vasella Andrea, professor ETH Hoenggerberg, HCI H315 CH-8093, Zürich, Switzerland	01.01.1990-
Institute of Organic Chemistry, TU Wroclaw, Poland	The synthesis of heterocyclic compounds	Mlochowski Jacek, professor, Technical University of Wroclaw, 50-370 Wroclaw, Poland	01.01.1986-
Institute of Organic Chemistry, Univ. Debrecen, Hungary	The synthesis of heterocyclic compounds	Levai Albert, professor, H-4010 Debrecen, P.O.Box 20, Hungary	01.01.1995-
Institute of Organic Chemistry, U Warsaw, Poland	The synthesis of heterocyclic compounds	Cyranski, M. K., professor, 02 093 Warsaw, Poland	01.01.1996-
Institute of Organic Chemistry, AU Krakow, Poland	The synthesis of heterocyclic compounds	Tomasik Piotr, professor, Mickiewicz Ave. 21 31 120 Krakow, Poland	01.01.1975-
Department of Organic Chem. and Biology UNED, Madrid, Spain	The synthesis of heterocyclic compounds, NMR spectroscopy	Claramunt, R. M., Cabildo, P., Lopéz G., professors, UNED, Madrid, Spain	01.01.1998-
Instituto de Quimica Medica (CSIC), Madrid, Spain	Physical organic chemistry	Eiguero, J. B., professor, Madrid, Spain	01.01.1998-
Institute of Organic Chemistry, Panon Univ. Mosonmagyaróvár, Hungary	The synthesis of heterocyclic compounds. Utilization in Agriculture	Schmiedt Rudolf, professor, Mosonmagyaróvár, Hungary	01.01.1997-
Department of Chemistry, Univ. Puerto Rico, USA	Structure determination of amino acids and peptides	Baran Peter, Dr, Department of Chemistry, Univ. of Puerto Rico, Rio Pedras, PO Box 23346, San Juan 00931-3346, Puerto Rico, USA	2002
Department of Chemistry, Keele University, United Kigdom	The synthesis of heterocyclic compounds	Ramsden Christopher, professor, Keele, Staffordshire ST55BG, United Kigdom	1980

C. Membership in Domestic Organizations and Societies

Name	Organisation or Society	Position	Valid date
Fišera Ľubor	Academic board of STU	member	2003
Fišera Ľubor	Academic board of FCHPT	member	1997
Fišera Ľubor	Scientific Grant Agency	chairmann	2000
Fišera Ľubor	Chemical Papers	member	1994
Berkeš Dušan	Slovak Chemical Society	member	1984

Name	Organisation or Society	Position	Valid date
Bobošíková Mária	Slovak Chemical Society	member	1993
Fišera Ľubor	Slovak Chemical Society	chairmann	1971
Floch Lubomír	Slovak Chemical Society	member	1972
Gracza Tibor	Slovak Chemical Society	member	1984
Hlobilová Iva	Slovak Chemical Society	member	1997
Jedlovská Eva	Slovak Chemical Society	member	2003
Koreňová Anna	Slovak Chemical Society	member	1983
Milata Viktor	Slovak Chemical Society	member of advisory board	1977
Považanec František	Slovak Chemical Society	member	1983
Stankovský Štefan	Slovak Chemical Society	member	1971
Šafař Peter	Slovak Chemical Society	member	2000
Špirková Katarína	Slovak Chemical Society	member	1983
Štetinová Jarmila	Slovak Chemical Society	member	1973
Uher Michal	Slovak Chemical Society	member	1965
Végh Daniel	Slovak Chemical Society	member	1972
Žúžiová Jozefína	Slovak Chemical Society	member	1989
Černuchová Petra	Slovak Chemical Society	member	2001
Gardianová Mária	Slovak Chemical Society	member	2002
Lasíková Angelika	Slovak Chemical Society	member	1996
Berkeš Dušan	Slovak Society of Industrial Chemistry	member	1995
Bobošíková Mária	Slovak Society of Industrial Chemistry	member	1995
Fišera Ľubor	Slovak Society of Industrial Chemistry	member	1993
Floch Lubomír	Slovak Society of Industrial Chemistry	member	1995
Gracza Tibor	Slovak Society of Industrial Chemistry	member	1996
Hlobilová Iva	Slovak Society of Industrial Chemistry	member	1998
Jedlovská Eva	Slovak Society of Industrial Chemistry	member	1993
Koreňová Anna	Slovak Society of Industrial Chemistry	member	1995
Milata Viktor	Slovak Society of Industrial Chemistry	member	1993
Marchalín Štefan	Slovak Society of Industrial Chemistry	member	1996
Považanec František	Slovak Society of Industrial Chemistry	member	1995
Stankovský Štefan	Slovak Society of Industrial Chemistry	member	1995
Šafař Peter	Slovak Society of Industrial Chemistry	member	1998
Špirková Katarína	Slovak Society of Industrial Chemistry	member	1993
Štetinová Jarmila	Slovak Society of Industrial Chemistry	member	1993
Uher Michal	Slovak Society of Industrial Chemistry	member	1995
Végh Daniel	Slovak Society of Industrial Chemistry	member	1993
Žúžiová Jozefína	Slovak Society of Industrial Chemistry	member	1995
Černuchová Petra	Slovak Society of Industrial Chemistry	member	2002
Gardianová Mária	Slovak Society of Industrial Chemistry	member	2003
Lasíková Angelika	Slovak Society of Industrial Chemistry	member	1996
Zálupský Peter	Slovak Society of Industrial Chemistry	member	1996
Štibrányi Ladislav	Slovak Society of Industrial Chemistry	member	1995
Dugovič Branislav	Slovak Society of Industrial Chemistry	member	2003
Babjak Matej	Slovak Society of Industrial Chemistry	member	2000

D. Membership in International Organisations and Societies

Name	Organisation or Society	Position	Valid date
Fišera Ľubor	ARKIVOC	member	2000
Fišera Ľubor	American Chemical Society	member	1994
Fišera Ľubor	German Chemical Society	member	1994
Fišera Ľubor	Czech Chemical Society	member	1994
Gracza Tibor	German Chemical Society	member	1994
Gracza Tibor	Czech Chemical Society	member	1997
Marchalín Štefan	Czech Chemical Society	member	1980
Milata Viktor	Czech Chemical Society	member	2002
Milata Viktor	ARKIVOC	member	2000
Végh Daniel	Magyar Tudomanos Akademia	member	2001
Gracza Tibor	Advisory Board of EUROCAT	member	2002
Milata Viktor	Molecules	member	2000
Milata Viktor	Eur. J. Org. Chem.	member	2002
Fišera Ľubor	Eur. J. Org. Chem.	member	2002

E. Visitors from abroad

Name	Organisation or Institution	State	Date / Duration
Maienfisch, P.	Novartis, Basel	Switzerland	March 2004 (1 day)
Holý, A.	ČAV, Prague	Czech. Republic	May 2004 (1 day)
Mihovilovic, M.	TU Vienna	Austria	May 2004 (1 day)
Brinker, U.	Univ. Vienna	Austria	May 2004 (1 day)
Ghandhi, R. P.	Univ Delhi	India	July 2004 (1 day)
Padwa, A.	Emory Univ.	USA	June 2004 (1 day)
Sowinsky, M.	IUT Orsay, Univ. Paris-Sud	France	May-June 2004 (60 days)
Martin, C.	IUT Orsay, Univ. Paris-Sud	France	May-June 2004 (60 days)
Gillet, C.	IUT Orsay, Univ. Paris-Sud	France	May-June 2004 (60 days)
Schmalz, G.	Univ. Cologne	Germany	November 2004 (1 day)
Leitner, W.	Univ. Aachen	Germany	November 2004 (1 day)
Bellus, D.	Basel	Switzerland	November 2004 (1 day)
Zimmerman, J.	Novartis, Basel	Switzerland	November 2004 (1 day)
Altmann, K.-H.	ETH Zürich	Switzerland	November 2004 (1 day)
Kos, A.	MDL	Germany	November 2004 (1 day)

F. Visits of Staff Members and Postgraduate Students in Foreign Institutions

Name	Organisation / Institution / Conference	State	Date / Duration
Babjak, M.	Conference, Pardubice	Czech. Republic	June 2004 (4 days)
Babjak, M.	Conference, Prague	Czech. Republic	September 2004 (5 days)
Baumlová, B.	Conference, Pardubice	Czech. Republic	June 2004 (4 days)
Baumlová, B.	Conference, Prague	Czech. Republic	September 2004 (5 days)
Berkeš, D.	Conference, Pardubice	Czech. Republic	June 2004 (4 days)
Černuchová, P.	Univ. Paris-Sud, Orsay	France	2004 (90 days)
Dugovič, B.	Conference, Pardubice	Czech. Republic	June 2004 (4 days)
Dugovič, B.	Conference, Prague	Czech. Republic	September 2004 (5 days)
Fišera, L.	Vienna, T. Univ. Vienna	Austria	2004 (5 days)
Fišera, L.	Univ. Strasbourg	France	April 2004 (30 days)
Fišera, L.	FU Berlin	Germany	February, July 2004 (28 days)
Fišera, L.	Conference, Pardubice	Czech. Republic	June 2004 (4 days)
Fišera, L.	BDSHC, Budapest	Hungary	November 2004 (3 days)
Gracza, T.	Conference, Pardubice	Czech. Republic	June 2004 (4 days)
Jedlovská, E.	Conference, Ostrava	Czech. Republic	September 2004 (4 days)
Kapitán, P.	Conference, Pardubice	Czech. Republic	June 2004 (4 days)
Kapitán, P.	Conference, Prague	Czech. Republic	September 2004 (5 days)
Koóš, P.	Conference, Pardubice	Czech. Republic	June 2004 (4 days)
Koóš, P.	Conference, Prague	Czech. Republic	September 2004 (5 days)
Koreňová, A.	Conference, Wroclaw	Poland	September 2004 (4 days)
Lásiková, A.	Univ. Clermont Ferrand	France	2004 (180 days)
Hlobilová, I.	FU Berlin	Germany	2004 (365 days)
Marchalín, Š.	Univ. Le Havre	France	May-June 2004 (60 days)
Milata, V.	T. Univ. Vienna	Austria	(8 days)
Milata, V.	Univ. Paris-Sud, Orsay	France	March 2004 (31 days)
Milata, V.	Conference, Wroclaw	Poland	September 2004 (4 days)
Milata, V.	Conference, Pardubice	Czech Republic	June 2004 (4 days)
Milata, V.	Conference, Nymburk	Czech. Republic	November 2004 (3 days)
Puterová, Z.	Conference, Prague	Czech. Republic	September 2004 (5 days)
Stankovský, Š.	Conference, Pardubice	Czech. Republic	June 2004 (4 days)
Šafař, P.	Conference, Ostrava	Czech. Republic	September 2004 (4 days)
Špirková, K.	Conference, Ostrava	Czech. Republic	September 2004 (4 days)
Štetinová, J.	Conference, Pardubice	Czech. Republic	June 2004 (4 days)
Uher, M.	Conference, Wroclaw	Poland	September 2004 (4 days)
Végh, D.	Conference, Pardubice	Czech. Republic	June 2004 (4 days)
Végh, D.	Conference, Ostrava	Czech. Republic	September 2004 (4 days)
Végh, D.	Conference, Wroclaw	Poland	September 2004 (4 days)
Végh, D.	Univ. Mosonmagyaróvár, Univ. Budapest	Hungary	2004 (6 days)

VII. THESES AND DISSERTATIONS

A. Graduate Theses (Bc Degree) for state examinations after three years of study

Name	Title of Thesis	Supervisor
Bella, M.	Preparation and properties of condensed selenium heterocycles.	Milata, V.
Bobuľa, T.	Synthesis of amino derivatives of thiophene as a basis for novel material with optoelectronic properties.	Végh, D.
Bošmanská, K.	Reactivity study of organolithium derivatives of substituted thiophenes with selected electrophiles.	Štibrányi, L.
Mlynský, T.	Nucleophilic additions at the activated carbon-carbon double bond.	Považanec, F.
Mošovský, L.	Pictet-Spengler reaction in the synthesis of cyclic amino acids.	Šafař, P.
Pažitný, A.	Stereoselectivity of 1,3-dipolar cycloaddition reactions of nitrones with terminal alkenes in the presence of Lewis acids.	Fišera, L.
Štefko, M.	Synthesis and synthetic utility of 2,3-diazabutadienes substituted by a heterocycle.	Végh, D.

B. Graduate Theses (MS Degree) for state examinations after five years of study

Name	Title of Thesis	Supervisor
Figedyová, S.	Fluorosubstituted derivatives of 2-aminobutanoic acid.	Považanec, F.
Horváthová, H.	Enantiomerically pure derivatives of homotryptophan and their pyrrol-3-yl analogs. yl analogs (P. Šafař)	Šafař, P.
Petro, M.	Preparation and reactions of some analogues of quinazoline alkaloids.	Stankovský, Š.
Vrábel, M.	Preparation of spironucleosides by 1,3-dipolar cycloadditions.	Fišera, L.
Wiesenganger, T.	Influence of Lewis acids on 1,3-dipolar cycloadditions of nitrones with vinyl ethers.	Fišera, L.
Winklerová, D.	Crystallization-induced asymmetric transformation (CIAT) in the synthesis of N-terminal amino acid analogs of natural Ninkomycines.	Berkeš, D.

C. Dissertations (PhD)

Name	Title of Thesis	Supervisor
Babjak, M.	Stereocontrolled Pd(II)catalysed cyclisations of unsaturated polyols in the synthesis of natural compounds.	Gracza, T.

VII. PUBLICATIONS

Books, Chapters in monographs

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- [4] Kutschy, P., Vinšová, J., Berkeš, D., Torok, M.: Introduction to medicinal chemistry Skriptum, UPJŠ Košice, 2004, 122s, ISBN 80-7097-544-X
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- [6] Végh, D., Nemcová, M.: Prieskum syntézy ? – konjugovaných tiofénových derivátov, ZOD 136/03 (119 000.-Sk s DPH) Georganics consortium ZOD 136/03. Prieskum syntézy ? – konjugovaných tiofénových derivátov, (119 000.-Sk s DPH) Georganics consortium
- [7] Végh, D., Uher, M., Nemcová, M.: Prieskum syntézy a príprava bitienylových derivátov (119 000.-Sk s DPH) ZoD 119/04 Georganics consortium ZoD 119/04. Prieskum syntézy a príprava bitienylových derivátov (119 000.-Sk s DPH). Georganics consortium
- [8] Végh, D., Somorovská, M., Nemcová, M.: Prieskum syntézy heterocyklických zlúčenín (178 500.-Sk s DPH) ZoD 178/03 Georganics consortium ZoD 178/03. Prieskum syntézy heterocyklických zlúčenín (178 500.-Sk s DPH). Georganics consortium

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- [2] Fišera, L.: Využitie stereoselektívnych cykloadičných, cyklizačných a oxykarbonylačných reakcií v totálnych syntézach prírodných látok a ich analógov. Grant. VEGA
- [3] Gracza, T. Synthesis of optically pure buildings blocks for syntheses of biologicaly active natural compounds and their analogues as potential chemotherapeutics Grant. č. p. APVT-20-010702.
- [4] Marchalín, Š.: Stereoselective syntheses, reactivity and properties of hydroxylated indolizidines and substituted indolizines. Grant. VEGA 1/9249/02.

- [5] Végh, D., Floch, L., Zálupský, P., Čík G., Puterová Z., Cílené syntézy a štúdium nových heterocyklických zlúčenín vykazujúcich optoelektronické vlastnosti, špecifickú biologickú aktivitu a apoptózu. Grant. VEGA 1/1379/04

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- [5] Fišera, L.: Stereoselective 1,3-Dipolar Cycloadditions of Nitrones and Nitrile Oxides In: University of Grenoble, April, 2004, France.
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- [7] Marchalín, Š.: Novel approaches to the synthesis of functionalized indolizines and indolizidines. Cycle de conférences, Juin 17, 2004. Université de Rouen, IRCOF, France.
- [8] Milata, V.: Functionally substituted alkoxyethylenes in organic synthesis, In: 30.3.2004, 16,30, Salle de Conférences Olivier Kahn, Bat. 410, Institut de Chimie Moléculaire et des Matériaux d'Orsay – Ecole Doctorale de Chimie d'Orsay, Université Paris-Sud, F-91405 Orsay

DEPARTMENT OF ORGANIC TECHNOLOGY

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Technical staff:

Eva Šuleková, Ľudmila Tvarožková, Gabriel Mikeš

II. TEACHING AND RESEARCH LABORATORIES

A. Teaching laboratories:

Technological laboratory 1, 2, 3, 4

B. Research laboratories:

Laboratory of separation (chromatographic) methods
Laboratory of spectroscopic methods
Laboratory of catalytic reactor processes technique

III. TEACHING

A. Undergraduate Study:

1. semester (Bc)	Organic Technology and Petrochemistry	(3-1 h)	Hronec, Kaszonyi
1. semester (Bc)	Fine Chemicals	(2-2 h)	Mravec
1. semester (Bc)	Semestral project	(0-4 h)	Cvengrošová, Hronec, Kaszonyi, Mravec, Štolcová, Gašparovičová
1. semester (Bc)	Chemical-Engineering Thermodynamics	(0-2 h)	Vojtko
	Catalysis	(2-0 h)	Hronec
	Engineering Calculations on a Computer	(1-2 h)	Kaszonyi
	Processes of Organic Technology	(2-1 h)	Králik
1. semester (Bc)	Laboratory Practise I	(0-8 h)	Báhidský, Cvengrošová, Gašparovičová, Horváth, Hronec, Juhás, Kaszonyi, Mravec, Štolcová
1. semester (Bc)	Kinetics and Reactors	(0-2 h)	Kaszonyi
	Process Design	(2-1 h)	Hronec, Králik

	Technology of Monomers and Polymers	(2-0 h)	Vojtko
	Special Organic Products	(2-0 h)	Mravec
1. semester (Bc)	Analysis of Complex Organic Systems	(0-2 h)	Štolcová, Cvengrošová
	Laboratory Practise II	(0-7 h)	Cvengrošová, Hronec, Gašparovičová, Kaszonyi Mravec, Štolcová
1. semester (Bc)	Coating Materials	(2-0 h)	Kramár
	Manufacturing of Pharmaceuticals	(2-1 h)	Mravec
	Laboratory Practise III	(0-14 h)	Cvengrošová, Hronec, Kaszonyi, Gašparovičová, Mravec, Štolcová
1. semester (Bc)	Seminar to Masters Theses	(0-3 h)	Cvengrošová, Hronec, Kaszonyi, Králik, Mravec, Štolcová
1. semester (Bc)	Catalysis (PhD)	(2 h)	Hronec

IV. CURRENT RESEARCH PROJECTS

Ecofriendly options for the production of nitrogen compounds and their precursors (Milan Hronec)

Selective gas phase hydroxylation of benzene to phenol was studied in the presence of N₂O as oxidation agent. The research revealed that selective catalysts are also hydroxyapatites and Cu phosphates, which in contrary to zeolites are able to hydroxylate benzene in the gas phase also by the mixture of ammonia – oxygen. From this mixture N₂O is formed in the first reaction step. This takes part in the oxidation reaction. The kinetic isotope effect and the results of oxidation of some alkylaromatics suggest that the reaction proceeds rather by a classical radical mechanism than via alpha oxygen, as it has been published up to now.

Beta zeolites with defined acid strength and the type of Broensted and Lewis sites were prepared and tested for condensation of aniline to diphenylamine. In the progress is the research of partial oxidation of methane to formaldehyde, selective oxidation of cyclohexylamine to cyclohexanone oxime, oxidation of propylene to propylene oxide and synthesis of pyridine from ethanol, formaldehyde and ammonia.

A simultaneous hydrogenation of nitro group and hydrogenation of chlorine in chloroanilines was also studied over palladium catalysts on resins and inorganic materials.

Project duration: from january 2002 to december 2004

Zeolites as catalysts for fine chemicals intermediates (Dušan Mravec, Martin Bajus)

Tert-butylation of toluene

Preparation of shape-selective zeolite catalysts for alkylation of toluene by deactivation of outer surface of basic zeolites. Study of tert-butylation of toluene in the liquid phase over basic and modified zeolite catalysts (H-MOR and H-BEA).

Benzoylation of biphenyl

Study of 4-benzoyl biphenyl preparation (intermediate for pharmaceuticals) by biphenyl benzoylation with the utilization of shape-selective zeolite catalysts.

Etherification of glycerol

Study of reaction conditions for oxygenates to fuels preparation by etherification of glycerol with tert-butanol, isobutylene and C₄ –fraction over different acid catalysts.

Project duration: from january 2003 to december 2004

V. CURRENT EDUCATION PROJECTS

VI. COOPERATION

A. Cooperation in Slovakia

Institution	Type of cooperation	Responsible person	Duration
DETOX, a. s. Banská Bystrica		Kaszonyi	from 1996
DUSLO, a. s., Šaľa		Hronec	from 1996
FERMAS, s. r. o., Slovenská Ľupča		Kaszonyi	from 2003

Institution	Type of cooperation	Responsible person	Duration
NCHZ, a. s., Nováky		Kaszonyi	from 1995
PlasticOmnium, s. r. o., Lozorno		Kaszonyi	from 2002
SLOVNAFT VURUP, a. s., Bratislava		Kaszonyi, Hronec	from 1990
VUCHT, Bratislava		Hronec	from 1990
CHEMZA, a. s., Strážske		Vojtko	from 2003
CarCode, Bratislava		Kaszonyi	from 2001
SLOVAKOFARMA, a.s,Hlohovec		Mravec	from 1995

B. International Cooperation

Institution	Type of cooperation	Responsible person	Duration
ENSCM, Montpellier, France	- zeolite catalysts, - physico-chemical characterisation of solid catalysts	Mravec, Hronec	from 1992
Universita di Padova, Italy	ad hoc projects on polymer supported catalysts, characterisation	Králik, Hronec	from 1991
Italian National Centre of research, Padova - Legnaro, Italy	ad hoc project on preparation of organic supports for catalysts	Králik, Hronec	from 1993
CNRS, Lyon, France	Oxidation of organic materials	Hronec, Horváth	from 2002

C. Membership in Domestic Organizations and Societies

Name	Organisation or Society	Position	Valid date
Hronec M.	SAIV (Slovak Academy of Engineering Sciences)	chairmann	from 2001
Hronec M.	SSPCH (Slovak Society for Industrial Chemistry)	chairmann	from 1990
Hronec M., Kaszonyi A., Mravec D.	SCHS (Slovak Chemical Society)	member	from 1990
Hronec M.	Editorial Board of Journal: Petroleum and Coal	member	from 1992

D. Membership in International Organisations and Societies

Name	Organisation or Society	Position	Valid date
Hronec M.	National representative of the European Federation of catalysis Societies (EFCATS)	member	from 1992
Hronec M.	Member of the European Academy of Sciences and Arts	member	from 1995

E. Visitors from abroad

Name	Organisation or Institution	State	Date / Duration
Červený L., Tichý J., Čejka J.	ICT Prague and Pardubice, CAS	Czech Republic	21. – 22. 1. 2004
Červený L., Zeman S.	ICT Prague, Pardubice	Czech Republic	7. – 8. 6. 2004
Pancharoeni U., Chairit P.	University Bangkok	Thailand	23. – 25. 9. 2004

F. Visits of Staff Members and Postgraduate Students in Foreign Institutions

Name	Organisation / Institution / Conference	State	Date / Duration
Hronec M.	SC, ICT Prague	CR	28. – 29. 1. 2004
Hronec M.	Concorde, Madrid	Spain	28. – 29. 3. 2004
Hronec M.	SC, ICT Prague	CR	28. – 29. 4. 2004
Hronec M.	State exams, ICT Prague	CR	7. – 8. 6. 2004
Mravec D.	13. ICC Paris	France	9. – 17. 7. 2004
Hronec M.	13. ICC Paris	France	10. – 17. 7. 2004
Báhidský M., Kaszonyi A., Štolcová M., Vallušová Z.	13. ICC Paris	France	10. – 17. 7. 2004
Hronec M.	Concorde, Udine, Terst	Italy	31. 8. – 3. 9. 2004

Name	Organisation / Institution / Conference	State	Date / Duration
Cvengrošová Z., Gašparovičová D., Hronec M., Horváth B., Kaszonyi A., Štolcová M., Báhidský M., Juhás E., Vallušová Z.	7th Pannonian Intern. Symposium on Catalysis, Smí	CR	12. – 16. 9. 2004
Hronec M.	SC, ICT Prague	CR	5. – 6. 10. 2004
Juhás E., Mrzula M.	Summer School EFCATS, Ustron	PL	21. – 26. 9. 2004
Hronec M.	Concorde, Munich	Germany	15. – 17. 10. 2004
Gašparovičová D., Hronec M., Horváth B., Mrzula M., Slobodník M., Vallušová Z.	XXXIV. Symposium on catalysis, Prague	CR	7. - 9. 11. 2004
Hronec M.	Concorde, Berlin	Germany	19. – 21. 11. 2004
Hronec M.	SC, ICT Prague	CR	6. – 7. 12. 2004
Vojtko J., Klepáčová K.	Aprochem, Milovy	CR	20. – 22. 9. 2004
Vojtko J.	KOKA, Brno	CR	8. – 9. 9. 2004

VII. THESES AND DISSERTATIONS

A. Graduate Theses (Bc Degree) for state examinations after three years of study

Name	Title of Thesis	Supervisor
Gireth Robert	Kovové katalyzátory na funkcionalizovaných polymérnych nosičoch Metal catalysts supported on functional resins	Gašparovičová Dana, Králik Milan
Gregorová Katarína	Acetylén – výroba a využitie Acetylene - Manufacture and utilization	Cvengrošová Zuzana
Lengyelová Melinda	Xylény – výroba a použitie Xylenes – manufacture and utilization	Cvengrošová Zuzana
Mihálová Mária	Výroba a použitie etylbenzénu a kuménu Manufacturing and utilization of ethylbenzene and isopropylbenzene	Mravec Dušan
Mišura Július	Výroba a použitie etanolu Manufacturing and utilization of ethanol	Mravec Dušan
Mišút Michal	Výroba a využitie anilínu Manufacture and utilization of aniline	Štolcová Magdaléna
Priadková Lucia	Vulkanizácia kaučuku Vulcanization of rubber	Gašparovičová Dana, Králik Milan
Rakottyay Karol	Výroba a použitie formaldehydu Manufacture and utilization of formaldehyde	Kaszoniy Alexander
Strempeková Veronika	Výroba a použitie benzénu Manufacturing and utilization of benzene	Mravec Dušan

B. Graduate Theses (MS Degree) for state examinations after five years of study

Name	Title of Thesis	Supervisor
Karácsonyiová Darina	Priama hydroxylácia aromátov v plynnej fáze Direct hydroxylation of aromatics in gas phase	Hronec Milan
Karkošiak Slavomír	Príprava prekursorov substituovaných aromatických amínov Preparation of precursors for substituted aromatic amines	Štolcová Magda
Koppová Romana	Hydrogenácia aromatických nitrozlúčenín na katalyzátoroch kov – zeolit Hydrogenation of aromatic nitrocompounds over metal – zeolite catalysts	Gašparovičová Dana, Králik Milan
Kostrab Gabriel	Terc.butylácia toluénu na zeolitových katalyzátoroch Tert-butylation of toluene over zeolite catalysts	Mravec Dušan
Kováč Peter	Terc.butylácia glycerolu Ter-butylation of glycerol	Mravec Dušan
Laluch Ján	Reduktívna alkylácia aromatických aminozlúčenín Reductive alkylation of aromatic aminocompounds	Gašparovičová Dana, Králik Milan
Lenčoš Pavol	Parciálna oxidácia metánu na fosfátových katalyzátoroch Partial oxidation of methane over phosphate catalysts	Štolcová Magda
Lukáč Pavol	Epoxidácia propylénu v plynnej fáze Epoxidation of propylene in the gas phase	Hronec Milan

Name	Title of Thesis	Supervisor
Macko Róber	Premena metánu na silike Transformation of methane over silica	Hronec Milan
Merva Vojtech	Oxidácia cyklohexylamínu v parnej fáze Oxidation of cyclohexylamine in vapor phase	Kaszonyi Alexander
Slobodník Marek	Syntéza pyridínu z etanolu, formaldehydu a čpavku Synthesis of pyridine from ethanol, formaldehyde and ammonia	Cvengrošová Zuzana
Vlčko Miroslav	Syntéza karbazolu z difenylamínu The synthesis of carbazole from diphenylamine	Cvengrošová Zuzana
Žužov Jozef	Aminácia benzénu amoniakom Amination of benzene by ammonia	Kaszonyi Alexander

C. Dissertations (PhD)

Liptáková B. Gas phase oxidation of benzene to phenol
 Krátky V. Hydrogenation of aromatic nitrocompounds

E. Habilitation Theses

Štolcová Magdaléna Štúdium katalyzovaných oxidačných procesov
 Study of catalytic oxidation processes

VII. PUBLICATIONS

CC publications

- [1] Bahidsky, M., Hronec, M.: Direct gas phase hydroxylation of benzene over phosphate catalyst *Catalysis Today* 91-92, str. 13 – 16, 2004
- [2] Besson M., Gauthard F., Horvath B., Gallezot P. Catalytic Oxidation with Air of Cyclohexanone to Dicarboxylic Acids on Synthetic Carbons. Effect of Supported Metals and Solvents *J. Phys. Chem. B*; 2004; ASAP Web Release Date: 02-Dec-2004
- [3] Corain, B., Guierriero, P., Schiavon, G., Zapparoli, M., Kralik, M.: Generation of silica skeleton inside of gel-type functional resins supporting catalytically active palladium nanoclusters *J. Mol. Catal. A Chemical* 211 (2004) 237-242
- [4] Cvengroš, J., Cvengrošová, Z.: Used frying oils and fats and their utilization in the production of methyl esters of higher fatty acids *Biomass and Bioenergy* 27, 173-181 (2004)
- [5] Liptáková, B., Bahidský, M., Hronec, M.: Preparation of phenol from benzene by one step reaction *Appl. Catal. A- General* 263, 1, str. 33 - 38, 2004
- [6] Mravec, M., Zavadan, P., Kaszonyi, A., Joffre, J., Moreau, P.: Tert-butylation of toluene over zeolite catalysts. *Appl. Catal. A: General* 257, 49-55, (2004).

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- [1] Kostrab, G., Mravec, D.: The transformations of 4-tert-butyltoluene over Ce-modified mordenite zeolites. *Petroleum and Coal* 42 (1), 28-34, (2004).

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- [1] Bahidsky, M.*, Hronec, M.: Gas-phase hydroxylation of aromatics over copper-phosphate catalyst In: 13th International Congress on Catalysis, 11-16 July 2004, Paris, France,
- [2] Kaszonyi, A., Cvengrošová, Z., Hronec, M.: Catalysis of oxidation by non-redox acid catalysts: oxidation of cyclohexylamine to cyclohexanone oxime In: 13th International Congress on Catalysis, Paris, 11-16 July, 2004, Po., Book of Abstracts 1 (P2-114)
- [3] Vallušová, Z.*, Hronec, M., Králik, M.: Hydrogenation of chloronitrobenzenes over noble metals supported on Beta zeolite In: 13th International Congress on Catalysis, 11-16 July, 2004, s. 266. CD 2 strany. Paris, France
- [4] Bahidsky, M.*, Hronec, M.: Direct hydroxylation of aromatics over copper-phosphate catalyst In: 7th Pannonian international symposium on catalysis 12 – 16 September 2004, Srní, Šumava, Czech Republic, s. 46.
- [5] Cvengrošová, Z.*, Slobodník, M., Kaszonyi, A., Hronec, M. Condensation reaction of ethanol, formaldehyde and ammonia In: 7th Pannonian International Symposium on Catalysis, Srní, Czech Republic, September 12-16, 2004.
- [6] Horváth, B., Hronec, M.: Gas phase epoxidation of propylene In: 7th Pannonian International Symposium on Catalysis, Sept. 12-16 (2004), Srní, Czech Republic, p. 64
- [7] Horváth, B., Hronec, M.: Gas-phase epoxidation of propylene In: XXXVI Symposium on Catalysis, Nov. 8-9 (2004), Prague, Czech Republic, p.37-38

- [8] Juhás, E., Štolcová, M., Hronec, M.: Direct formation of formaldehyde from methane over silica supported iron catalysts In: XXXVI. Symposium on Catalysis, November 8 – 9, 2004, Praha, p 70
- [9] Kaszonyi, A., Cvengrošová, Z., Hronec, M.: The Role of Catalysts Acidity in the Oxidation of Cyclohexylamine In: 7th Pannonian International Symposium on Catalysis, Srní, Šumava Czech Republic, 12 - 16 September 2004, p-69
- [10] Mrzula, M., Hronec, M.*: Amination of Phenol and its Derivates In: 7th Pannonian International Symposium on Catalysis, Srní, Šumava, Czech Republic, p 27
- [11] Slobodník, M.*, Cvengrošová, Z., Kaszonyi, A., Hronec, M.: Pyridine from ethanol, formaldehyde and ammonia In: XXXVI. Symposium on Catalysis, November 8 – 9, 2004, Praha, p 52
- [12] Štolcová, M.*, Juhás, E., Hronec, M.: Direct oxidation of methane to formaldehyde over iron-calcium-phosphates In: 13th International Congress on Catalysis 11-16 July, 2004, Paris, p. 151
- [13] Štolcová, M.*, Karkošák, S., Hronec, M.: Process for p-phenylenediamine without meta- and ortho-isomers In: 7th Pannonian International Symposium on Catalysis, Srní, Šumava, Czech Republic, p 98
- [14] Gašparovičová, D.*, Hronec, M., Centomo, P., Králik, M.: A comparison of Pd-Cu catalysts supported on organic ionic resins and alumina in the liquid phase reduction of nitrates In: XXXVI Symposium on Catalysis, Prague, Czech Republic, s. 9-10. November 8 - 9, 2004.
- [15] Juhás, E., Štolcová, M., Hronec, M.: Direct formation of formaldehyde from methane over silica supported iron catalysts In: 7th Pannonian International Symposium on Catalysis, Srní, Šumava, Czech Republic, p 27
- [16] Juhás, E., Štolcová, M., Hronec, M.: Oxidation of methane over silica supported iron catalysts In: 3rd Efcats School On Catalysis Ustroń, Poland, September 12 - 26, 2004, p 65
- [17] Mrzula, M.*, Štolcová, M., Hronec, M.: Sulfenimides by catalytic oxidation of 2-mercaptobenzothiazole with alkylamines In: 3rd Efcats School On Catalysis Ustroń, Poland, September 12 - 26, 2004, p 32.
- [18] Mrzula, M.*, Štolcová, M., Hronec, M.: Sulfenimides by catalytic oxidation of 2-mercaptobenzothiazole with alkylamines In: XXXVI. Symposium on Catalysis, November 8 – 9, 2004, Praha, p 70
- [19] Vallušová, Z.*, Hronec, M., Králik, M.: Effect of support on the platinum-metal catalysts in the hydrogenation of chloronitrobenzenes In: XXXVI Symposium on Catalysis, November 8-9, 2004, s. 11-12. Prague, Czech Republic
- [20] Klepáčová, K.*, Kováč, P., Mravec, D., Hájeková, E., Bajus, M.: Oxygenate additives to diesel fuels prepared by etherification of glycerol. In: Motor Fuels 2004 (International Symposium) Vyhne, Hotel Sitno, June 14-17, 2004, Pr. MF-2234 Proceedings, ISBN 80-968011-3-9.
- [21] Klepáčová, K.*, Kováč, P., Mravec, D., Hájeková, E., Bajus, M.: Preparation of glycerol tert-butyl ethers - possible oxygenate additives to diesel fuel. In: APROCHEM 2004, 20-22. september, 2004 Milovy, Hotel Devět skal, Pr., Zborník prednášok s.158, ISBN 80-02-01576-2
- [22] Vojtko, J., Macho, V., Mravec, D.: Azelainic acid from natural sources In: APROCHEM 2004, 20-22. september, 2004 Milovy, Hotel Devět skal, Pr., Zborník prednášok s.162, ISBN 80-02-01576-2
- [23] Vojtko, J.: Highway and environment In: KOKA 2004, Brno
- [24] Gašparovičová, D.*, Hronec, M., Centomo, P., Králik, M.: Liquid phase catalytic reduction of nitrates - recent results In: 7th Pannonian International Symposium on Catalysis, Srní, Šumava Czech Republic, s. 61. 12 - 16 September 2004.
- [25] Mravec, D.*, Klepáčová, K., Hájeková, E., Bajus, M.: Oxygenates to diesel fuels by tert-butylation of glycerol. In: 13th International Congress on Catalysis, Paris, 11-16 July, 2004, Po., Book of Abstracts 2 (P4-005)
- [26] Vallušová, Z.*, Hronec, M., Králik, M.: Platinum supported catalysts in the hydrogenation of chloronitrobenzenes In: 7th Pannonian International Symposium on Catalysis, September 12-16, 2004, Srní, s. 101. Czech Republic

Contracts

- [1] Hronec, M., Cvengrošová, Z.: Analysis of polyetherpolyols ZoD 32/2004 NCHZ a.s. Nováky
- [2] Hronec, M., Cvengrošová, Z.: Kinetics of isooctylchloride hydrolysis ZoD 76/2004 Ciba Spec., Švajčiarsko
- [3] Hronec, M., Štolcová, M., Cvengrošová, Z.: New process concepts for oxidation ZoD 76/2004 M G Finauziaria, Italy
- [4] Hronec, M.: Synthesis of sulfenamides ZoD 60/2004, VUCHT a.s., Bratislava
- [5] Kaszonyi A., Cvengrošová Z., Quantitative and Qualitative analysis of VOC ZoD 175/04,176/04 Bratislava, december 2004, VÚRUP -Slovnaft, a.s.
- [6] Kaszonyi, A., Štolcová, M., Cvengrošová, Z., Hronec, M.: Analysis of mother liquor of threonine ZoD 83/03 Fermas, jun 2004, Slovenská Lupča
- [7] Kaszonyi, A.: Methods of analysis of solvents ZoD 111/04, sept. 2004, Detox, Rimavská Sobota
- [8] Kaszonyi, A.: Development of etching agent for glass ZoD 15/04, 16/04,41/04,61/04,89/04,96/04,128/04,158/04 CarCode, Bratislava,
- [9] Vojtko, J.: Preparation of free radicals from waste of Dastib manufacturing ZoD 40/2004 Chemza a.s. Strážske

Grants

- [1] Hronec, M., Kaszonyi, A., et al. Ecofriendly options for the production of nitrogen compounds and their precursors Grant VEGA 1/9142/02
- [2] Hronec, M.: CONCORDE EU project Concorde 505834-1, Coordinatort CSIC Madrid

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Martin Bajus, DSc;

Associate Professors:

Pavol Daučík, PhD; Pavol Hudec, PhD; Agáta Smiešková, PhD; Zdenek Židek, PhD;

Assistant Professors :

Elena Hájeková, PhD;

Research Fellows:

Jozef Ambro; Beata Liptáková; Ľuboš Šabo;

PhD Students:

Pavel Marcinkovič; Peter Michalica;

Technical staff:

Marcela Hadvinová; Dagmar Machatová; Marta Olleová;

II. TEACHING AND RESEARCH LABORATORIES

A. Teaching laboratories:

Laboratory of Catalysts Characterization
Laboratory of High Pressure Reactors
Laboratory of Gas and Liquid Chromatography
Laboratory of Chemistry and Analysis of Fuels
Laboratory of Pyrolysis
Laboratory of Petrochemistry
Laboratory of Rheology of Lubricants
Laboratory of Infra-Red Spectroscopy
Laboratory of Natural Gas Conversion

B. Research laboratories:

Laboratory of Catalysts Characterization
Laboratory of High Pressure Reactors
Laboratory of Gas and Liquid Chromatography
Laboratory of Chemistry and Analysis of Fuels
Laboratory of Pyrolysis
Laboratory of Petrochemistry
Laboratory of Rheology of Lubricants
Laboratory of Infra-Red Spectroscopy
Laboratory of Natural Gas Conversion

III. TEACHING

A. Undergraduate Study:

1. semester (Bc)	Organic Technology and Petrochemistry	3/1/0	Bajus, Daučík
1. semester (Bc)	Technology of Crude Oil	3/0/0	Židek, Daučík
	Analysis of Petroleum Products	2/0/0	Daučík, Židek
	Combustion Processes	1/2/0	Smiešková
	Refinery and Petrochemical Plants (1-2 h) Daučík, Ambro	1/2/0	Daučík, Ambro
	Laboratory exercise I.	0/0/8	Daučík, Židek
1. semester (Bc)	Catalysis	0/1/0	Hudec

1. semester (Bc)	Catalytic and Thermal Processes in Crude Oil Treatment	2/0/0	Židek, Smiešková
	Alternative Fuels	2/0/0	Bajus, Hájeková
	Lubricants in Tribology	2/0/0	Hájeková, Daučík
	Kinetic and Reactors	0/2/0	Hudec
1. semester (Bc)	Laboratory exercise II.	0/8/0	Hudec
1. semester (Bc)	Petrochemistry	3/0/0	Bajus, Hudec
	Gas Industry	2/0/0	Hudec, Daučík
	Laboratory exercise III	0/0/10	Hudec, Židek

IV. CURRENT RESEARCH PROJECTS

VEGA project No 1/9143/02 Thermal and catalytic conversions of hydrocarbons from crude oil and natural gas to reformulated fuels and petrochemicals (Professor M. Bajus).

- The subject of the scientific project was the study of kinetics and mechanism of thermal and catalytic conversion of hydrocarbons from heavy naphtha with polyethylene and polypropylene, oxidative dehydrogenation of light alkanes and synthesis of oxygenate additive tert-butyl ethers type to diesel fuels. The preparation of alkylethers of glycerol by etherification (O-alkylation) by C4-olefines at the presence of the acid catalyst is one of the possibilities of the glycerol usage as renewable source in Slovakia.

During 2002-2004 period of the project was studied: solubility of polymers (PE, PP, PVC, PST, PET) in aromatic diluent (xylenes) and in primary naphtha pyrolysis of individual polymers (PE, PP) in batch reactor thermal decomposition of PE, PP and PS in the system PYRO-GC-MS copyrolysis of primary naphtha with polyethylene, polypropylene in flow tubular reactor etherification of glycerol by C4-olefines over acid catalysts (Amberlyst) butylation of toluene over zeolites

Project duration: from 01. 01. 2002 to 31. 12. 2004

VEGA project No 1/9144/02 The modern trends in petroleum treatment and in petrochemistry (Associate Professor P. Hudec)

The study of physical, physico-chemical and catalytic processes leading to the conversion of petroleum fractions, individual hydrocarbons or natural gas to prepare components of modern and perspective reformulated fuels corresponding to the strict ecologic and economic requirements. Examined topics join to the production of motor fuels in refinery-petrochemical complex Slovnaft on the base of hydrocracking of heavy residues. Solved is influence of the composition on light and oxidizing stability and low-temperature properties of motor fuels. In work, the possibilities of the improving the quality of the products by the modification of classical hydrotreating catalyst by modified Y-type zeolites and by mesoporous molecular sieves of M41S type, and the modification of fluid catalytic cracking catalyst by ZSM-5 zeolite additives will be studied, in direct connection with the composition of industrial feeds in these processes.

Project duration: from 01. 01. 2002 to 31. 12. 2004

V. CURRENT EDUCATION PROJECTS

VI. COOPERATION

A. Cooperation in Slovakia

Institution	Type of cooperation	Responsible person	Duration
SLOVNAFT, j.s.co., Bratislava			
PETROCHEMA, j. s. co., Dubová		Šuráb Jozef, director, 976 97 Nemecká	
TRANSPETROL, j. s. co., Bratislava		Polák Peter, technical director, Šumavská 98, 821 08 Bratislava	
VÚRUP, j. s. co., Bratislava		Mikulec Jozef, director, Vlčie hrdlo, 824 12 Bratislava	
DRON - Sklady, ltd. co.	Recycling of polymer waste	Hóka Csaba, director, Gazdovský rad 1587, 931 01 Šamorín	

Institution	Type of cooperation	Responsible person	Duration
NAFTA, Gbely, j.s.co.			
Slovak Academy of Science, Institute of Polymers, Bratislava			
Institute of Chemistry, Faculty of Natural Sciences, Comenius University, Bratislava	Synthesis of silica aerogels	Ing. K. Jesenák	1998 -
Department of Nuclear Physics and Technology, Faculty of Electrical Engineering, Bratislava	Moessbauer spectroscopy of Fe-modified zeolites	Prof. Ing. M. Miglierini, DrSc.	1997 -

B. International Cooperation

Institution	Type of cooperation	Responsible person	Duration
ABO – University, Finland	Modification and characterization of zeolites and their application in izomerization reactions	Prof. Narendra Kumar	2001 -
University of Calgary, Canada	Determination of physical properties and chemical structure of polymer modified bitumens	Prof. Ludovít Zanzotto	
Ecole Nationale Supérieure de Chimie, Montpellier, France	Xe-NMR-characterization of dealuminated zeolites	Prof. Francois Fajula	1998 -
Institute of Physico-Chemistry and Electrochemistry, Academy of Sciences, Prague, Czech Republic	Evaluation of zeolites by infrared spectroscopy. Determination of adsorption properties of ZSM-5 zeolites	Ing. Milan Kočířík, CSc.	1997 -

C. Membership in Domestic Organizations and Societies

Name	Organisation or Society	Position	Valid date
Ambro Jozef	Slovak Society of industrial Chemistry	member	
Bajus Martin	Slovak Society of industrial Chemistry	member	
Daučík Pavol	Slovak Society of industrial Chemistry	member	
Hájeková Elena	Slovak Society of industrial Chemistry	member	01. 01. 1994
Hudec Pavol	Slovak Society of industrial Chemistry	member	
Liptáková Beáta	Slovak Society of industrial Chemistry	member	
Michalica Peter	Slovak Society of industrial Chemistry	member	
Smiešková Agáta	Slovak Society of industrial Chemistry	member	
Židek Zdenek	Slovak Society of industrial Chemistry	member	
Daučík Pavol	Slovak institute of technical normalization	member	30. 04. 2001
Daučík Pavol	Examining board in the field of oils	member	29. 11. 2001
Hudec Pavol	Slovak zeolite association at SSPCH	president	01. 01. 2001
Smiešková Agáta	Slovak zeolite association at SSPCH	member	
Šabo Ľuboš	Slovak zeolite association at SSPCH	member	
Židek Zdenek	Slovak zeolite association at SSPCH	member	
Hudec Pavol	Slovak Society of Chemical Engineering	member	
Smiešková Agáta	Slovak Society of Chemical Engineering	member	
Židek Zdenek	Slovak Society of Chemical Engineering	member	

E. Visitors from abroad

Name	Organisation or Institution	State	Date / Duration
Zanzotto, L.	Faculty of Engineering, University of Calgary, Calgary	Canada	7 days

F. Visits of Staff Members and Postgraduate Students in Foreign Institutions

Name	Organisation / Institution / Conference	State	Date / Duration
Michalica, P.	The Univeristy of Calgary, Calgary	Canada	01. 02. 2004 – 03. 03. 2004, 27. 09. 2004 - 22. 12. 2004
Hudec P.	CHISA 2004, Praha	ČR	22.-26.8.2004
Hudec P.	13th ICC, Paříž	Francúzsko	10.-16.7.2004
Smiešková A.	7th Pannonian Int.Symp. on Catalysis, Srní	ČR	12.-16.9.2004

Name	Organisation / Institution / Conference	State	Date / Duration
Hudec P.,	7th Pannonian Int.Symp. on Catalysis, Srní	ČR	12.-16.9.2004
Šabo Ľ.	7th Pannonian Int.Symp. on Catalysis, Srní	ČR	12.-16.9.2004
Hudec P.	XXXVI. Symposium on Catalysis, Praha	ČR	8.-9.11.2004
Smiešková A.	XXXVI. Symposium on Catalysis, Praha	ČR	8.-9.11.2004

VII. THESES AND DISSERTATIONS

A. Graduate Theses (Bc Degree) for state examinations after three years of study

Name	Title of Thesis	Supervisor
Šimko Ondrej	Dehydrogenation of propane	Bajus, M.
Baláž Tomáš	Properties of zeolite type acid catalysts in n-hexane model reaction	Liptáková, B.
Taranda Richard	Evaluation of acid properties of modified zeolites by TPD method	Liptáková, B.
Vdovjak Ladislav	Determination of polymer content in petroleum products by chromatography and extraction methods	Daučík, P.

B. Graduate Theses (MS Degree) for state examinations after five years of study

Name	Title of Thesis	Supervisor
Gyeráková Frederika	Influence of Additives on Low-Temperature Properties of Diesel fuels	Daučík, P.
Hortuláni Vladimír	IR-spectra of acid centers in zeolites	Hudec, P.
Hurný Róbert	Coke formation during copyrolysis of polypropylene with straight-run naphtha	Hájeková, E.
Krivdová Iveta	Study of the acid properties of catalysts by TPDA and model reactions	Smiešková, A.
Marcinkovič Pavel	Used tyres pyrolysis	Bajus, M.
Maňo Peter	Aromatization of methane over zeolite catalysts	Liptáková, B.
Pečenka Marián	Copyrolysis of polyethylene and polypropylene with straight-run naphtha	Hájeková, E.
Tomaník Adam	Separation of Gas Oils by the Liquid Chromatography	Daučík, P.

C. Dissertations (PhD)

Name	Title of Thesis	Supervisor
Michalica, P.	Determination of physical properties and chemical structure of polymer modified bitumens	Smiešková, A.
Marcinkovič, P.	Study of bitumen properties and stone-bitumen-polymer interactions	Daučík, P.

VIII. PUBLICATIONS

CC publications

- [1] Smiešková A., Rojasová E., Hudec P., Šabo Ľ.: Aromatization of light alkanes over ZSM-5 catalysts. Influence of the particle properties of the zeolite. *Applied Catalysis A: General* 268, 235-340 (2004)
- [2] Smiešková A., Rojasová E., Hudec P., Šabo Ľ.: Study of the Role of Zn in Aromatization of Light Alkanes with Probe Molecules. *React. Kinet. Catal. Lett.* 82 (2), 227-234 (2004)

Text books

- [1] Hudec P.*, Tóth R., Smiešková A.: Microactivity-Tests of FCC Catalyst Modified with ZSM-5 Zeolites. In: Symposium on micro- and meso-porous materials, 16th International Symposium of Chemical and Process Engineering CHISA-2004, 22-26 August 2004 Prague, Summaries 2- str.593-594, CD-ROM of full-text D-8.7, 6 strán, ISBN 80-86059-40-5 (Pr)
- [2] Smiešková A.*, Hudec P., Michalica P., Šabo Ľ.: Application of Olefin and Alkane Conversion in Monitoring the Strength of Acid Sites in Y zeolite. In: XXXVI Symposium on Catalysis, Prague, Czech republic, 8.-9. 11.2004, p.79-80 (Po)
- [3] Ambro J.*, Daučík P., Jakubík T.: Separation of aromatics from middle distillates. *Motor Fuels 2004*, Vyhne June 14-17, 2004, Slovak republic, MF-2234" ISBN 80-968011-3-9

- [4] Hájeková E., Bajus M.: Recycling of polyalkenes as polyalkene waxes by copyrolysis with primary naphtha. In: APROCHEM 2004, 13 konference chemické technologie, 20. - 22. 9.2004 Milovy, Česká republika, s. 89-93, ISBN 80-02-01576-2
- [5] Hudec P.*, Šabo L., Smiešková A.: Mikropórové a mezopórové molekulové sitá v chemickom priemysle. In: WORKSHOP 2004 - Slovenská chémia v 3.tisícročí, 11.-13.februára 2004, FCHPT STU Bratislava, zborník str. 32-33 (Pr)
- [6] Klepáčová, K.*, Kováč, P., Mravec, D., Hájeková, E., Bajus, M.: Oxygenate additives to diesel fuels prepared by etherification of glycerol. In: Motor Fuels 2004, Vyhne June 14-17, 2004, Slovak republic, MF-2234" ISBN 80-968011-3-9
- [7] Klepáčová, K.*, Kováč, P., Mravec, D., Hájeková, E., Bajus, M.: Preparation of tert.buthylethers of glycerol as possible oxygenated additives into naphtha. In: APROCHEM 2004, 13 konference chemické technologie, 20. - 22. 9.2004 Milovy, Česká republika, s. 158-163, ISBN 80-02-01576-2
- [8] Mravec D., Klepáčová K., Hájeková E., Bajus M.: Oxygenates to diesel fuel by tert-butylation of glycerol. In: 13th International Congress on Catalysis, 11-16 July 2004, Paris, France, Book of abstracts, P4-005
- [9] Hájeková E., Bajus M., Danišková J.: Feedstock Recycling of Polyethylene and Polypropylene by Copyrolysis with naphtha. In: Abstracts of plenary lectures and oral presentations 16th International Symposium on Analytical and Applied Pyrolysis, May 23-27, 2004, Alicante-Spain, L30
- [10] Liptáková B., Hudec P., Smiešková A.: Transformation of methane over Mo/HZSM-6 catalysts. In: 7th Pannonian Symposium on Catalysis, 12-16 September 2004, Srní, Czech republik, Zborník str.76 (Po)
- [11] Smiešková A., Hudec P., Šabo L.: Correlation between the acidity and activity of ZSM-5, USY, Mordenite and T-zeolite. In: 7th Pannonian Symposium on Catalysis, 12-16 September 2004, Srní, Czech republik, Zborník str. 91 (Po)
- [12] Šabo L.*, Hudec P., Gábová V., Smiešková A.: Unique hydrogenation activity of Ni/MCM-41 catalyst. In: 7th Pannonian Symposium on Catalysis, 12-16 September 2004, Srní, Czech republik, Zborník str.39 (Po)
- [13] Hudec P.*, Tóth R., Smiešková A., Židek Z.: Additivation of FCC-catalysts with ZSM-5 zeolite. Influence of Si/Al ratio and thermal pretreatment of ZSM-5 zeolite. In: 7th Pannonian Symposium on Catalysis, 12-16 September 2004, Srní, Czech republik, Zborník str.25 (pr)

Contracts

- [1] Bajus M., Hájeková E.: Polymer waste recycling. DRON-Sklady s.r.o., Gazdovský rad 1587, 93101 Šamorín

Grants

- [1] Bajus M., Hájeková E. a ďalší: Katalytické a termické premeny uhlíkovdík z ropy a zemného plynu na petrochemikálie. GRANT VEGA 1/91143/02, SR
- [2] Hudec P.: Modern trends in oil processing and petrochemistry. Grant Grantovej agentúry SR VEGA 1/9144/02

DEPARTMENT OF PHYSICAL CHEMISTRY

Head of Department:
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I. STAFF

Full Professors:

Stanislav Biskupič, PhD, DSc; Vlasta Brezová, PhD, DSc; Andrej Staško PhD, DSc; Peter Šimon, PhD, DSc

Associate Professors:

Tomáš Bleha, PhD, DSc; Martin Breza, PhD; Ján Cvengroš, PhD, DSc; Anton Gatíal, PhD; Pavel Kovařík, PhD; Jozef Kožíšek, PhD; Milan Mazúr, PhD, DSc; Jiří Polavka, PhD; Peter Rapta, PhD; Ján Reguli, PhD; Marián Valko, PhD, DSc.

Assistant Professors :

Dana Dvoranová, PhD; Marek Fronc; Erik Klein, PhD; Ľubomír Zalibera, PhD

Research Fellows:

Andrea Kleinová, Jarmila Paligová

PhD Students:

Zuzana Cibulková, Teodora Kocsisová, Ingrid Kortišová, Katarína Matuszná, Júlia Pigošová, Kleinová Miroslava

Technical staff:

Imrich Csonka, Elena Fabíková, Alžbeta Chochulová, Marta Lintnerová, Štefan Miksai, Milan Štefunko, Mária Šuleková.

II. TEACHING AND RESEARCH LABORATORIES

A. Teaching laboratories:

Laboratory for the Basic Course of Physical Chemistry
Laboratory for the Advanced Course of Physical Chemistry
Laboratory of Electronics
Laboratory of UV-VIS and IR Spectroscopy
Computational Laboratory

B. Research laboratories:

Laboratory of Thermal Analysis and Calorimetry
Laboratory of EPR Spectroscopy
Laboratory of IR spectroscopy
Laboratory of Molecular Distillation and Alternative Diesel Fuels

III. TEACHING

A. Undergraduate Study:

1. semester (Bc)	Physical Chemistry I	(3-2 h)	S. Biskupič, A. Gatíal
	Physical Chemistry II	(3-2 h)	P. Rapta
	Laboratory Practice in Physical Chemistry I	(0-3 h)	J. Reguli
1. semester (Bc)	Physical Chemistry II	(3-2 h)	S. Biskupič, P. Kovařík, A. Gatíal
	Laboratory Practice in Physical Chemistry II	(0-3 h)	J. Reguli
1. semester (Bc)	Physical Fundamentals of Spectroscopic Methods	(2-2 h)	A. Staško, V. Brezová
1. semester (Bc)	Biophysical Chemistry I	(2-2 h)	M. Valko
1. semester (Bc)	Chemical Physics I	(2-1 h)	M. Breza
	Thermodynamics	(2-1 h)	P. Šimon
	Kinetics and Catalysis	(2-1 h)	P. Kovařík
	Colloid Chemistry	(2-0 h)	T. Bleha

1. semester (Bc)	Statistical Treatment and Evaluation of Exp. Data	(2-0 h)	M. Breza
	Group Theory and Symmetry	(2-0 h)	M. Breza, V. Kvasnička
	Special Laboratory Practice I	(0-8 h)	P. Rapta
1. semester (Bc)	Chemical Physics II	(2-1 h)	S. Biskupič
	Solid State Physics	(2-0 h)	M. Breza
	Biophysical Chemistry II	(2-0 h)	M. Valko
	Special Laboratory Practice II.	(0-6 h)	P. Rapta
1. semester (Bc)	Traineeship		
	Excursion		
1. semester (Bc)	Molecular Spectroscopy	(2-1 h)	A. Staško
	Chemical Physics III	(2-0 h)	A. Gatial
	Physical Chemistry of Macromolecules	(2-0 h)	T. Bleha
	Special Laboratory Practice III	(0-10 h)	P. Rapta

IV. CURRENT RESEARCH PROJECTS

DEVELOPMENT AND APPLICATION OF COMPUTATIONAL METHODS TO THE STUDY OF ELECTRONIC STRUCTURE OF MOLECULAR SYSTEMS (Stanislav Biskupič)

Within this research project, new theoretical treatments based on quantum-chemical principles are developed and then - with other accessible techniques - used to obtain exact and detailed information on the structure and dynamics of selected molecular systems. Many-body perturbation and CC formalism of interaction energy evaluation (higher order contributions) has been elaborated and applied to some van der Waals complexes that are important for chemical reactions in upper shells of the Earth atmosphere. Systematic study of the factors causing unusual electronic structure of selected compounds with interesting physico-chemical properties has been oriented to oligothiophenes, cyclophosphazenes, transition metal complexes in unusual oxidation states and blue proteins model compounds. Vibration spectra of new push-pull olephines (as model compounds of pharmacotherapeutics) have been calculated and interpreted.

Project duration: from 2003 to 2005

SPECTROSCOPICAL ANALYSIS OF STRUCTURE AND REACTIVITY OF FREE RADICALS AND TRANSITION METAL COMPLEXES IN CHEMICAL, BIOLOGICAL AND PHOTOCHEMICAL SYSTEMS (Vlasta Brezová)

Research project is focused on the investigation of structure and reactivity of radical intermediates and metal complexes in the chemical, electrochemical, photochemical, and biological systems with the predominant application of spectroscopic methods (EPR, UV/VIS/NIR spectroscopy) and electrochemical techniques (voltammetry). The investigation is oriented especially on the synthesis and physicochemical characterization of new organic materials for LEDs (Light Emitting Devices) systems, and on the study of magnetic, redox and spectroscopic properties of metal complexes. The primary radical intermediates of the photoinduced electron transfer in heterogeneous titanium dioxide systems, as well as reactive species produced upon the photoexcitation of drugs are investigated. Additionally, the attention is paid to research of antioxidant properties of foods and beverages (tea, wine, beer) with the main aim to select foods with the positive health effect. Concerning the experimental methods, the systematical development of combined spectroelectrochemical and spectrophotocatalytic techniques continued, as well as further analysis of experimental error sources in quantitative EPR spectroscopy is performed.

Project duration: from 01/2003 to 12/2005

MATERIALS – physico-chemical methods of their study (Peter Šimon)

The method for the evaluation of kinetic parameters of induction periods has been elaborated. The method enables to estimate the length of nonisothermal induction periods in the processes such as rubber curing, oxidation in condensed phase, freezing of undercooled liquids, oxidation stability of drugs and foods, etc. The method is expected to be applied in the quality management and risk assessment in technological processes. Theory of model-free isoconversional kinetics is developed and a new incremental isoconversional method has been elaborated. The method enables modeling the processes without deeper insight into their mechanism. Degradation and stabilisation of PVC is studied both experimentally and theoretically. The attention is paid to the non-hazardous stabiliser mixtures based on tocoferyl acetate.

Project duration: from 2003 to 2005

ELECTRON STRUCTURE AND PROPERTIES OF MATERIALS IN SOLID PHASE (Jozef Kožišek)

The ambition of the solved project is the integrated study of the selected systems in solid state with possible applications in understanding the mechanisms of enzymatic reactions in biological systems. In the experimental area the present possibilities of measurements on the synchrotron equipments in the Europe (Hamburg, Grenoble) are utilized, as well as our collaboration with TU-Darmstadt. The composition of investigators of this project was selected in such way that involves both theoretical (quantum-mechanical) as well as available experimental methods (X-ray analysis, EPR spectroscopy, DSC measurements). So it will be possible to produce the complex results including many aspects of the studied systems. We focus our attention on the study of electronic structure and properties of the model systems of blue proteins. For this purpose we have synthesized monocrystals of the compounds [Cu(bite)(BF₄)] and [Cu(bite)(BF₄)₂] which very well reproduce the active centre of these interesting biological catalysers. The electron density of compounds with various characteristic types of coordination sphere are studied experimentally and results are correlated with the physico-chemical properties of these and similar compounds. These measurements will be correlated also with ab-initio quantum-chemical calculations in solid state.

Another object of experimental study is the electron density of stereospecific catalyzers on the base of Ni complexes with Schiff bases, which are reaction centers for the asymmetric synthesis of various aminoacids and their analogs.

Project duration: from 2002 to 2004

Research and development of biogenic ecological fuels and lubricants from domestic renewable resources (Ján Cvengroš)

The research project is focused on the research, development, production and application of esters of higher fatty acids as ecological fuels for diesel engines based on the renewable domestic raw materials with complex utilisation of the by-products. The main results in 2003 are as follows:

1. Oxidation of methyl esters based on rapeseed oil and methyl esters based on frying oils used as the alternative diesel fuels, unstabilized and stabilized by some antioxidants has been studied by differential thermal analysis/thermogravimetry (DTA/TG) under non-isothermal conditions for various heating rates and by Rancimat test under isothermal conditions. Low oxidation stability of the undistilled methyl esters was stated. The induction period increased expressively by the addition of low quantities of selected antioxidants. Especially high stabilising effect was reached for pyrogallol. The results obtained by the both methods are compared and the differences are accounted for by the oxygen diffusion within the samples. The DTA/TG method is suitable for the evaluation of the oxidation stability of the studied esters.
2. The importance of the alternative fuels based on the biomass as reliable domestic and renewable resource is great. The environmental, energetic and economical effects connected with the production and the utilization of biofuels in the transportation were evaluated. The analysis of the biofuels taxation in the tax system of Slovakia was carried out.
3. Glycerol is a valuable by-product used in the production of methyl esters. Its production can positively influence economical balance of the production of methyl esters. The method of refinement of glycerol in vacuum evaporator with wiped film was tested and the parameters of the distilled glycerol were stated. Distilled glycerol meets the requirements of the industrial glycerol according to the standard.

Project duration: from 2002 to 2005

Basic characteristics of horizontal evaporator with wiped film (Ján Cvengroš)

Model study of evaporation, distillation and film flow in horizontal evaporator with wiped film. Basic characteristics of horizontal evaporator with controlled residence time of liquid on evaporation surface. The influence of selected design parameters (wiper, evaporation surface) and operational parameters (feed rate, viscosity, peripheral speed of wiper, pressure, temperature, evaporation degree) on the evaporator performance.

Project duration: from 2004 to 2006

Thermooxidation and photooxidation processes in chemical and biological systems and their influence on the quality of life (Stanislav Biskupič)

The project is oriented towards spectroscopic (EPR, UV/VIS) and thermoanalytical (DSC) characterization of the processes occurring in thermal and photooxidative degradation of food, drugs and newly synthesized pharmaceutical precursors. A great attention is paid to spectroscopic study of antioxidative properties of foods with the aim of selecting the group of beneficial functional food and to monitor and improve their quality. Elaboration of time-saving procedures for the determination of stability of food and drugs (DSC, EPR). Study of photoinitiated radical transformations of drugs, interpretation of the results by quantum-chemical calculations with the aim of elucidating the mechanisms of their effects and targeted improvement of their quality.

Project duration: from 06/2002 to 06/2005

The role of trace metals and light in camptothecin – serum albumin interactions (NMR and EPR studies) (M. Valko)

The anticancer drug camptothecin (CPT) is a plant alkaloid that has recently gained approval for clinical trials as a treatment of gastric, rectum, and bladder tumors. The drug exists in two forms, a lactone form which is biologically active and a carboxylate form which is not. It has been shown that in the presence of human serum albumin (HSA) the drug converts to the biologically inactive form and therefore the liposomal stabilization of the lactone form of the drug is of primary importance. In this connection the high resolution NMR study is planned to elucidate the stabilization of the lactone form of the drug and the nature of the binding mode with HSA. It is generally believed that camptothecin activity occurs through a free radical mechanism. We also believe, that the role of trace metals is in particular important. Our preliminary results show that upon irradiation (365 nm light) copper(II)-CPT complex generates free radicals which may cause DNA damage to cancer cells. The aim of the proposed project is to further investigate a radical mechanism of the action of the drug.

Project duration: from 2002 to 2004

I. SUSTAINPACK - Innovation and Sustainable Development in the Fibre Based Packaging Value Chain (Peter Šimon)

FP6 EU project aimed to mobilising the European scientific expertise in the packaging value chain to establish the European forest industry cluster as the dominant player in the packaging area within a decade. It will be implemented through the Sustainpack project which is intended to make real breakthroughs in fibre based packaging.

The overall objective of the RTD activities is to develop and implement a Sustainable Packaging Tool Platform based on renewable resources, giving innovative properties to packaging, thereby offering new value added packaging options for packaging users and for consumers. The Tool Platform comprises New Innovative Material Properties and New Innovative Process Developments to transform these materials into new packaging solutions.

Project duration: from 2004 to 2008

VI. COOPERATION

A. Cooperation in Slovakia

Institution	Type of cooperation	Responsible person	Duration
LikoSpol Bratislava	scientific	P.Šimon	2004
Research Inst. Food	scientific	P.Šimon	2004
BEL/Novaman	scientific, industrial	P.Šimon	2004
Res.Inst.Chem. Technology	scientific	P.Šimon	2004
Slovak Academy of Science	scientific	A.Staško	2004
DETOX Banská Bystrica	scientific, industrial	J.Cvengroš	2004
VŮLM Modra	scientific, industrial	J.Cvengroš	2004
Q-CHEM Bratislava	scientific, industrial	J.Cvengroš	2004
Petrolab Stupava	scientific	J.Cvengroš	2004
Kovostroj Lučenec	scientific, industrial	J.Cvengroš	2004
Ekoiil Bratislava	scientific, industrial	J.Cvengroš	2004
Lubocons Stupava	scientific	J.Cvengroš	2004
Bioenergia L. Mikuláš	scientific, industrial	J.Cvengroš	2004
Slovnaft VŮRUP Bratislava	scientific	J.Cvengroš	2004
TU Žilina	scientific	J.Cvengroš	2004
JAV-AKC Vičany	scientific	J.Cvengroš	2004

B. International Cooperation

Institution	Type of cooperation	Responsible person	Duration
LTNW, Manchester, UK (F.Kvasnik)	scientific	P.Šimon	2004
University of Technology, Sydney, Australia (A.Ray, P.Thomas)	scientific	P.Šimon	2004
Faculty of Chemistry, Technical University, Brno, Czech Republic (L.Omelka)	scientific	P.Šimon	2004

Institution	Type of cooperation	Responsible person	Duration
LUKAS Research, Prague, Czech Republic (R.Lukáš, L.Kalvoda)	scientific	P.Šimon	2004
Materialwissenschaft, TU Darmstadt, Germany (Prof. Hartmut Fuess)	scientific	J. Kožíšek	2004
State University of New York, Buffalo, USA (Prof. Philip Coppens)	scientific	J. Kožíšek	2004
Technologic Institute of Morelia, Mexico (Dr. Jesús García Díaz)	scientific	J. Kožíšek	2004
Technische Universität München (prof. Nuyken)	scientific	A.Štaško	2004
Liverpool John Moores University (Dr. Morris)	scientific	M. Valko	2004
Roosevelt University, Chicago (Prof. Telsler)	scientific	M. Valko	2004
TCT Vidče, Czech Republic	industrial	J. Cvengroš	2004

C. Membership in Domestic Organizations and Societies

Name	Organisation or Society	Position	Valid date
P.Šimon	Slovak Chemical Society	other	2004
A.Štaško	Slovak Chemical Society	member	2004
J. Cvengroš	Slovak Chemical Society	member	2004
J. Cvengroš	Slovak Society of Chemical Engineers	member	2004
J. Reguli	Slovak Commission for Chemistry Olympiad	member	2004

D. Membership in International Organisations and Societies

Name	Organisation or Society	Position	Valid date
P.Šimon	International Congress on Thermal Analysis and Calorimetry (ICTAC)	member	2004
A.Štaško	American Chemical Society	member	2004
S. Biskupič	International Society for Theoretical Chemical Physics (Germany)	member	2004
S. Biskupič	International ESR Society (USA)	member	2004
J. Kožíšek	International Union of Crystallography, IUCr	member	2004
J. Kožíšek	European Crystallographic Committee, EEC	member	2004
J. Cvengroš	American Oil Chemist's Society	member	2004

E. Visitors from abroad

Name	Organisation or Institution	State	Date / Duration
Brane Uranič	BDT, Wien	Austria	July 5.-7. 3 days
Marko Verbič	BDT, Wien	Austria	July 5.-7. 3 days
Graham King	SUNY Buffalo	USA	July 13.7.-20.8. 1 months
Harry Morris	John Moores University, Liverpool	UK	July 9.-30. 22 days
Chris Rhodes	University of Reading	UK	July 21.-27. 7 days
Frank Kvasnik	LTNW, Manchester	UK	August 6.-10. 5 days
Paul Thomas	UTS, Sydney	Australia	29.8.-12.9. 15 days
Mark Cronin	John Moores University, Liverpool	UK	November 30.11.-6.12 7 days

F. Visits of Staff Members and Postgraduate Students in Foreign Institutions

Name	Organisation / Institution / Conference	State	Date / Duration
D. Dvoranová	IR school, Prague	Czech Republic	February 18.1.-4.2. 18 days

Name	Organisation / Institution / Conference	State	Date / Duration
J. Pigošová	IR school, Prague	Czech Republic	February 18.1.-4.2. 18 days
J. Kožíšek	DESY - Hamburg	Germany	February 8.-13.. 6 days
M. Fronc	DESY - Hamburg	Germany	February 10.-16.. 7 days
M. Mazúr	NMR discussion group, Valtice, CZ	Czech Republic	April 19.-21.. 3 days
L. Zalibera	NMR discussion group, Valtice, CZ	Czech Republic	April 19.-21.. 3 days
J. Kožíšek	DESY - Hamburg	Germany	April 12.-15.. 4 days
M. Fronc	DESY - Hamburg	Germany	April 15.-20.. 6 days
V. Brezová	International TiO2 conference, Göttingen	Germany	April 24.-28.. 5 days
D. Dvoranová	International TiO2 conference, Göttingen	Germany	April 24.-28.. 5 days
M. Fronc	TU - Darmstadt	Germany	May 10.-14. 5 days
A. Staško	International Conference Science and Art, Olomouc	Czech. Republic	July 27.6.-3.7. 8 days
M. Valko	High field EPR, Liverpool	UK	June 24.5.-8.6. 16 days
A. Gatíal	Measurement of Raman spectra, Dresden	Germany	June 13.-15. 3 days
A. Staško	Wine Conference, Wien	Austria	July 4.-10. 7 days
J. Kožíšek	Gordon Conference, Saint Holy Oak University	USA	July 4.-9. 6 days
J. Kožíšek	TU Darmstadt	Germany	July 27.7.-2.8. 7 days
P. Rapta	Study stay, Dresden	Germany	July 19.7.-13.8. 26 days
J. Kožíšek	ECM22, Budapest	Hungary	August 26.-31. 6 days
J. Cvengroš	CHISA, Prague	Czech Republic	August 23.-27. 5 days
A. Gatíal	Conference EUCMOS, Krakow	Poland	September 5.-10. 6 days
J. Pigošová	Conference EUCMOS, Krakow	Poland	September 5.-10. 6 days
E. Klein	Congress of Chemists, Ostrava	Czech Republic	September 6.-10. 5 days
P. Šimon	13th International Congress on Thermal Analysis and Calorimetry, Sardinia	Italy	September 10.-21. 12 days
Z. Cibulková	13th International Congress on Thermal Analysis and Calorimetry, Sardinia	Italy	September 12.-19. 8 days
A. Staško	Vitamins 2004, Pardubice	Czech Republic	September 12.-15. 4 days
S. Biskupič	CESTC 2004, Tihany	Hungary	September 30.9.- 3.10. 4 days
M. Breza	CESTC 2004, Tihany	Hungary	September 30.9.- 3.10. 4 days
I. Kortišová	CESTC 2004, Tihany	Hungary	September 30.9.- 3.10. 4 days
M. Valko	NMR measurements, Bremen	Germany	September 2.-29. 1 months
P. Rapta	Bunsen colloquia, Dresden	Germany	October 23.-27. 5 days
P. Šimon	PIRA International, Leatherhead	UK	November 14.-17. 4 days
J. Kožíšek	DESY - Hamburg	Germany	November 3.-5. 3 days

Name	Organisation / Institution / Conference	State	Date / Duration
M. Fronc	DESY - Hamburg	Germany	November 5.-9. 5 days
J. Kožíšek	TU-Darmstadt	Germany	November 14.-19. 6 days
M. Fronc	TU-Darmstadt	Germany	November 14.-19. 6 days
A. Staško	PhD defense, Dresden	Germany	November 24.- 26.11 3 days

VII. THESES AND DISSERTATIONS

A. Graduate Theses (Bc Degree) for state examinations after three years of study

Name	Title of Thesis	Supervisor
Lukáš Bučinský	Ab initio Calculations of Electronic g-Tensors of Radicals with One Unpaired Electron on Non-degenerated Level	Stanislav Biskupič
Aneta Ferenčíková	Comparison of EPR and UV-Vis Studies of Radical-scavenging Activities of Metabolites Produced by Microorganisms to Standard Techniques of Antioxidant Properties Characterization	Peter Rapta
Agáta Jakubová	The Structural Study of Substituted Alkenes using NMR	Tibor Liptaj
Dominik Jánošík	Connection of IR Spectrometer via RS232C Interface	Stanislav Biskupič
Helena Juhásová	Conformational Analysis of Methyl-(E)-2-cyano-3-methoxyacrylate by Semiempirical Methods and Vibrational and NMR Spectroscopy	Anton Gatjal
Kristína Kačmarská	Rigorous Nonlinear Least-squares Method	Stanislav Biskupič
Agneša Nagyová	EPR Spectra Simulation of Cu(II) Complexes	Marián Valko
Michal Raab	Analytical Evaluation of Potential Energy Hypersurfaces	Stanislav Biskupič
Štefan Ševčík	Connection of UV/VIS Spectrometer via AD/DA Converter	Stanislav Biskupič
Katarína Švaňová	EPR Study of Stability and Antioxidant Properties of Foods	Vlasta Brezová
Lucia Učňová	Application of Isoconversion Methods in the Induction Periods Investigations	Peter Šimon
Andrea Vargová	EPR Investigation of Carotenoid Yeasts Metabolites with Reactive Radicals	Peter Rapta
Zuzana Vrecková	EPR Study of Photochemical Processes of Sunscreens Characterized by High Sun Protection Factor	Vlasta Brezová

B. Graduate Theses (MS Degree) for state examinations after five years of study

Name	Title of Thesis	Supervisor
Lucia Brnčalová	Preparation and properties of substituted stearic acid esters	Ján Cvangroš
Soňa Gabčová	Radical intermediates produced upon the photoexcitation of sunscreen products (EPR study)	Vlasta Brezová
Soňa Hajdušková	Redox properties of newly prepared pyrrol derivatives suitable for synthesis of new organic conducting polymers (UV-Vis, EPR a CV study)	Peter Rapta
Michal Ilčin	Application of the perturbation theory to the study of the intermolecular interaction between open and closed shell systems	Viliam Laurinc
Miroslava Kleinová	Interpretation of solid state EPR spectra of complex compounds	Marián Valko
Katarína Matuszná	Quantum-chemical calculations and linear optical spectroscopy of [n,n] paracyclophanes	Vladimír Lukeš
Michaela Miháliková	Analysis of the employment of NMR residual dipolar interactions in the molecular conformer studies	Tibor Liptaj

C. Dissertations (PhD)

Name	Title of Thesis	Supervisor
Dana Dvoranová	EPR study of radical intermediates in photochemical reactions	Vlasta Brezová

D. Dissertations (DSc)

Name	Title of Thesis
Milan Mazúr	Solid-state EPR spectroscopy of anisotropic systems
Marian Valko	EPR spectroscopy of transition metal complexes and their interactions with biological systems

F. Inauguration Theses

Name	Title of Thesis
Vlasta Brezová	Photoinitiated processes and investigation of photogenerated radical intermediates

VIII. PUBLICATIONS

Books, Chapters in monographs

- [1] Bakoš, D., Berkeš, D., Biskupič, S., Čertík, M., Dvoran, J., Izakovič, M., Kovařík, P., Mierka, O., Ondrejčková, I., Šajbidor, J.: Information technologies in education. In: *Nové trendy v chémii*. Vydavateľstvo STU, Bratislava, 17-22 (2004). ISBN 80-227-2026-0

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- [1] Breza, M., Biskupič, S.: On the structure of boat-shaped hexalead(II) cations with OH bridges. *Collect. Czech. Chem. Commun.* 69, 2055-2067 (2004)
- [2] Breza, M., Biskupič, S.: On the structure of tetralead(II) complexes with OH bridges. *Collect. Czech. Chem. Commun.* 69, 2045-2054 (2004)
- [3] Breza, M.: Comparative study of non-planar cyclotetraphosphazenes and their isostructural hydrocarbon analogues. *J. Mol. Struct. (THEOCHEM)* 679, 131-136 (2004).
- [4] Breza, M.: Quantum chemical study of the preferential ortho-addition of phenoxy radicals to nitroso spin-traps II. AIM analysis. *J. Mol. Struct. (THEOCHEM)* 683, 167-169 (2004).
- [5] Brezová, V., Dvoranová, D., Košťálová, D.: Oxygen activation by photoexcited protoberberinium alkaloids from *Mahonia aquifolium*. *Phytother. Res.* 18 (8), 640-646, (2004).
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- [11] Izakovič, M., Šima, J., Brezová, V.: Photochemical behaviour of iron(III) oxalato complexes with N,N'-ethylenebis(benzoylacetoneiminato) Schiff base derivatives. *J. Photochem. Photobiol. A: Chem.* 167 (2-3), 81-86, (2004).
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- [13] Kettmann, V., Lokaj, J., Kožíšek, J., Příkryl, J., Macháček, V.: 3-Butyl-1-(5-nitrobenzo[c][1,2]thiazol-3-yl)-3-phenyltriazene. *Acta Cryst.*, C60, o143-o145 (2004)
- [14] Kožíšek J., Fronc, M., Svoboda I., Kapitán P., Gracza T.: [(S,S)-2,2'-bis(4-isopropylloxazolin-2-yl)]palladium(II) chloride. *Acta Cryst.* E60, m1895-1896 (2004)
- [15] Kožíšek, J., Fronc, M., Skubák P., Popkov A., Breza M., Fuess H., Paulmann C.: Electronic structure of the nickel(II) complex of the Schiff base of (S)-N-(2-benzoylphenyl)-1-benzoylprolinamide and glycine. *Acta Cryst.* A60, 510-516 (2004).
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- [3] Cibulková, Z., Klein, E., Lukeš, V.: On the Antioxidant Effectiveness of N,N'-Substituted p-Phenylenediamines. *Petroleum and Coal* 46, 42-48 (2004).
- [4] Lukeš, V., Cibulková, Z.: On the energetics and torsional effects of selected N,N'- substituted p-phenylenediamines. *Petroleum and Coal* 45, 109-112 (2004).
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- [2] Kortišová-Bažányová I.*, Breza M.: Torsional dependence of spin density in diphenylamine-type antioxidants. In: Central European Symposium on Theoretical Chemistry 2004. Tihany, Hungary, 30.9.-3.10. 2004 (Po).
- [3] Breza M.*: AIM study of a galactose oxidase model compound. In: Central European Symposium on Theoretical Chemistry 2004. Tihany, Hungary, 30.9.-3.10. 2004 (Pr).

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- [2] Kocsisová, T.*, Cvengroš, J., Lutišan, J.: Pressure-free high-temperature esterification of fatty acids by lower alcohols. In: Proc. 31 th Int. Conf. of SSCHI, Tatranské Matliare, May 24 th-28 th, 2004, 7 pages.(Po)
- [3] Cvengroš, J.*, Polavka, J., Šimon, P.: Oxidation stability of methyl esters. In: 6. mezinárodní seminář TECHAGRO 2004, Brno 21 March 2004, booklet pp. 144–148, ISBN 80 – 903271 . 5 . X.
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- [10] Romančíková, E., Mikulec, J., Cvengroš, J.*: Biofuel production support using domestic renewable resources by means of the tax system in Slovakia. In: Proc. IV. Int. Biomass Forum, Febr. 9 th – 10 th, 2004 Bratislava, pp. 176-180.(Pr)
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Contracts

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- [2] Cvengroš, J.: Molecularr distillation. ZoD 105/04 Kovostroj Lučenec
- [3] Cvengroš, J.: Molecularr distillation. ZoD 112/04 Ekoil Šamorín
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Grants

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- [2] Šimon, P.: Štúdium dynamiky tepelných procesov v potravinárskej technológii LIKO Bratislava a.s. - ČÚ 14a „Štúdium dynamiky tepelných procesov v potravinárskej technológii“ riešenej v rámci štátneho programu úlohy výskumu a vývoja Kvalita života – zdravie, výživa, vzdelávanie, podprogramu „Potraviny – kvalita a bezpečnosť“, kód 5
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DEPARTMENT OF PHYSICAL EDUCATION

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Technical Staff:

Gabriela Borsányiová

II. TEACHING AND RESEARCH LABORATORIES

Gym 14x21 m – ground /volleybal, basketball, football/
Two Body Building rooms 15x5 m and 10x5 m
Table Tennis room

III. TEACHING

Aerobic	(2 h)	A. Balková
Kalanethics	(2 h)	A. Balková
Harmonic gymnastics	(2 h)	A. Balková
Healing gymnastic	(2 h)	A. Balková
Athletic sport	(2 h)	V. Lendel
Basketball	(2 h)	P. Bartok
Football	(2 h)	P. Bartok
Handball	(2 h)	M. Bobřík
Body building	(6 h)	M. Bobřík, P. Bartok, V. Lendel, Ľ. Benko, J. Fehér, Ľ. Benko, A. Balková
Swimming	(2 h)	M. Bobřík
Canoeing and kayak	(4 h)	Ľ. Benko
Volleyball	(2 h)	Ľ. Benko
Winter sports camp /skiing/		M. Bobřík, J. Fehér
Summer sports camp /		M. Bobřík, J. Fehér

IV. RESEARCH PROJECT

State of Physical and Motor Development of Undergraduates of FCHFT STU in Bratislava (Miroslav Bobřík)

V. COOPERATION IN SLOVAKIA

Faculty Physical Education and Sport of the Comenius University, Bratislava;
Research Institute of Physical Culture, Bratislava;
Institute of History, Slovak Academy of Sciences, Bratislava.

VIII. PUBLICATIONS

Other publications

- [1] Moravec, R., Tománek, Ľ., Bobřík, M.: Diagnostikovanie tréningového, zápasového zaťaženia a individuálnych zmien trénovanosti u 14 - 15 ročných basketbalistov. Telesná výchova a šport. Roč. XIV., Nr.2/2004, s. 7-12. ISSN 1335-2245.
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Text books

- [1] Lendel, V., Bobřík, M.*. : Skúsenosti, problémy a perspektívy v pedagogickom a vedeckovýskumnom procese na SCHPT STU z predmetu telesná výchova. In: Workshop 2004, Slovenská chémia v 3.tisícročí, 11-13. február 2004, FCHPT STU Bratislava, zborník príspevkov, s.55-57. ISBN 80-227-2023-2.

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- [4] Bobřík, M., Lendel, V., Benko, L.*: Porovnanie výsledkov metód merania tuku omronom a kaliperom na vzorke študentov FCHPT STU In: Optimalizácia zaťaženia v telesnej a športovej výchove (Load optimisation in physical and sports education), Bratislava 29.4.2004, s. 19-22. ISBN 80-227-2042-9.
- [5] Bobřík, M., Lendel, V., Benko, L.*: Porovnanie výsledkov metód merania tuku omronom a kaliperom na vzorke študentov FCHPT STU. In: Pohyb a zdravie (Physical Activities and Human Health). Vedecké práce z medzinárodnej interdisciplinárnej konferencie, Trenčín 1.4.2004, vydané na CD. ISBN - 80-8075-014-9, EAN - 9788080750145.
- [6] Bobřík, M.: Výchova a vzdelávanie v predmete telesná výchova a šport na STU v Bratislave. In: Formy výchovy a vzdelávania prostredníctvom športu. Slávnostná konferencia k otvoreniu Európskeho roka vzdelávania prostredníctvom športu v SR, 5. marec 2004, Bratislava. Zborník vedeckých príspevkov z konferencie na CD.

DEPARTMENT OF PLASTICS AND RUBBER

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Research Fellows:
Viera Khunová, PhD (Senior Research Fellow); Ľudmila Černáková, PhD;

PhD Students:
Peter Bugaj (since 1.10.2004); Denisa Bellušová (since 1.10.2004); Jozef Feranc (since 1.10.2004); Silvia Hanzelová (since 1.10.2003); Michal Jaššo (since 1. 10. 2002); Zuzana Kramárová (since 1.10.2003); ; Lenka Kukulíková (since 1. 10. 2001); Pavol Lukáč (since 1.10.2004); Eva Simigová (since 1.10.2003); Barbora Šimková (since 1. 10. 2002); Katarína Štechová (since 1.10.2004); Lucia Vodná (since 1.10.2004)

Technical staff:
Mária Dočolomanská; Viera Godályová; Mária Pekarovičová; Anna Tatarková

II. TEACHING AND RESEARCH LABORATORIES

A. Teaching laboratories:

Laboratory of Polymer Synthesis
Laboratory of Polymer Processing
Laboratory of Polymer Testing

B. Research laboratories:

Laboratory of Polymer Solutions
Laboratory of Polymer Modification
Laboratory of Thermal Analysis
Laboratory of Polymer Rheology
Laboratory of Electron Microscopy
Laboratory of Polymer Processing and Estimation of its Properties
Laboratory of Biomaterials

III. TEACHING

A. Undergraduate Study:

1. semester (Bc)	Macromolecular Chemistry	2/0/0	Chrástová
	Corrosion and Material Surface Treatment	2/0/2	Chovancová, Hudec
1. semester (Bc)	Technology of Materials	2/0/0	Hudec, Marcinčin, Majling
	Semestral Project	0/4/0	
	Production, Properties and Processing of Plastics	2/0/0	Hudec (for students of Faculty of Architecture)
1. semester (Bc)	Polymer Physics	2/2/0	Chodák
	Colloids and Interfaces	2/1/0	Bakoš, Reháková
	Macromolecular Chemistry II.	2/1/0	Chrástová
	Production and Processing of Plastics	3/0/0	Hudec
1. semester (Bc)	Production and Processing of Rubber	3/2/0	Kyselá
	Laboratory from Macromolecular Chemistry	0/0/8	Černáková
1. semester (Bc)	Additives for Plastics	2/0/0	Hudec
	Methods of Polymer Characterisation	2/0/0	Černáková
	Biotechnological Polymers	2/0/0	Bakoš

	Design of Experiments	1/1/0	Alexy
1. semester (Bc)	Laboratory from Production of Polymers	0/0/8	Alexy, Kyselá
1. semester (Bc)	Polymer Processing	3/1/0	Špírk
	Polymer Blends and Composites	2/0/0	Khunová
	Polymer Recycling and Waste Disposal	2/0/0	Hudec, Khunová, Špírk
	Polymer Testing	0/2/0	Alexy
1. semester (Bc)	Laboratory from Processing of Polymers	0/0/1 0	Alexy, Hudec
1. semester (Bc)	Diploma work	0/0/2 7	

IV. CURRENT RESEARCH PROJECTS

VEGA Project No 1/0059/03, Study of Structure and Properties of Crosslinked Polymers (Gabriela Kyselá).

The project is focused on the curing of polymers and copolymers during their preparation in the presence of multifunctional monomers and using the suitable post-polymerization reactions, too. The curing of elastomers is interesting in the application of non-harmful sulfur curing systems, based on the phosphoric accelerators and their combinations with thiazoles, respectively. The experiments are predominantly oriented on the researching of the optimal composition of accelerate systems, as well as, on the connection of the network structure of crosslinked materials and their age resistance and the level of the retaining of original physical-mechanical properties, too. Also, the crosslinking reactions are studied in the course of two stage seeded semi-continuous starved emulsion polymerization of styrene and butylacrylate in the presence of N-methylol acrylamide. Partially crosslinked latexes with core-shell particles are used for formulation of ecological paints. The influence of polymerization strategy and crosslinking reaction on the film - forming properties of modified dispersions are investigated..

Project duration: from 01.01.2003 to 31.12.2005

VEGA Project No 1/0283/03, New Types Blends and Composites Materials Containing Biodegradable Polymers and Fillers (Ivan Hudec).

The project is aimed on the investigation of polymer blends and composite materials based on biodegradable polymers and particulate fillers. The main research and experimental efforts are focused on chemical and physical modification of thermoplastic, elastomeric and crosslinked multy-phase polymer materials by changing morphological structure and interphase interactions on polymer/polymer and polymer/filler interface. The selection of the polymer matrix and modification methods are oriented on the new achievements which enables to reveal relations between composition, structure and properties of studied multiphase polymer blends and composites.

Project duration: from 01. 01. 2003 to 31. 12. 2005

GER Project No 17/2001, Modification of Reinforcing Materials for Rubber Articles (Ivan Hudec).

Development of new technologies and procedures for surface modification of materials for rubber articles, using applications of plasma-chemical methods. Preparation of new types of biodegradable textile reinforcing materials based on polyvinylalcohol, their chemical and physical modification with the aim to obtain advantageneous physical-mechanical properties and required adhesion to rubber. Preparation of new rubber blends for warp applications in combination with textile and steel cords, including the application of new and advanced types of elastomers.

Project duration: from 01.01.2002 to 30.11.2004

WHEYPOL - Project No GRD 2-2000-30385, Dairy Industry Waste as Source for Sustainable Polymeric Material Production (Dušan Bakoš).

The aim of the European procect is the preparation of biodegradable polyhydroxybutyrate (PHB) from whey (waste from milk industry) by biotechnological way. The cooperation of STU in this project is focused on investigation of blending PHB with other biodegradable polymers (e.g. polyethylene oxide), and investigation of various modes of compatibilization, as well as investigating the possibility of blending PHB with thermoplastic starch. Determination of ultimate properties of prepared blends with PHB matrix is aimed especially to improved toughness of the material.

Project duration: from 01.12.2001 to 30.11.2004

Project No 2-3-5 CHN, New Biomaterials Based on Chitosan Complexes (Dušan Bakoš).

Target of the project is complexation of natural polymers to set-up a new tissue-engineered multi-functional composite products that are successful in three-dimensional tissue regeneration as being biologically active, biodegradable, heterogenous, anisotropic structures. The research activity will be based on highly innovative technological processes and biopolymers (chitosan, hyaluronan and starch). Special nano-technologies for natural polysaccharide-based polymers will be used to optimise the materials morphological development and consequent mechanical and degradation behaviour and to tailor their in vivo performances.

Project duration: from 2002 to 2005

F. SUSTAINPACK - Integrated Project 6FP, Priority 3 – NMP, Research areas 3.4.2.2 and 3.4.2.3 (Dušan Bakoš)

(Sustainable development in the innovative fibre based packaging value chain)

Objective of the Project is to improve the competitiveness of fibre-based packaging through the development and application of nanotechnologies in order to reduce supply chain costs or add functionality. Participating in two subprojects: SP1 – Fibre based packaging value chain and SP3 – Fibre based composite packaging.

Project duration: from 2004 to 2007

G. KNIHA SK (BOOK SK) Technology of preservation library and archive documents (Dušan Bakoš)

Objective of the State Program Project is live prolonging of endangered paper documents in libraries and archives in SR, as well as assorting of books according to historical and technological criteria with livesaving of documents. In the experimental part of the project, the study is focused on an experimental evaluation of new technologies and objective comparing known and new technologies with the development of experimental base for research and education in the field of book and documents preservation.

Project duration: from 2003 to 2006

V. CURRENT EDUCATION PROJECTS

A. SOCRATES - ERASMUS (Eugen Špirk)

Bilateral Agreement for the Academic Year 2001/2006, SOCRATES Program, section for higher education ERASMUS, Between Slovak Technical University Bratislava - Martin Luther University Halle-Wittenberg

Project duration: from 2001 to 2006

VI. COOPERATION

A. Cooperation in Slovakia

Institution	Type of cooperation	Responsible person	Duration
Rubber Research Institute Matador, a.s., Púchov	Surface modification of reinforcing materials for tire construction by plasma		
Rubber Research Institute Matador, a.s. Púchov	Modification of traction properties of tires		
Research Institute of Processing and Application of Plastics, VUSAPL a.s., Nitra	New types of fillers and reinforcing materials for plastics		
LEONI Slovakia, Ltd., Trenčianska Teplá - Dobrá	PVC blends for cables		
VIPOTEST, Ltd., Partizánske	Rheology of rubbers and rubber mixtures		
Rubber Research Institute Matador, a.s. Púchov	New types of fillers and reinforcing materials for rubber blends		

B. International Cooperation

Institution	Type of cooperation	Responsible person	Duration
Martin Luther University of Halle-Wittenberg, Institute of Materials Science, Halle, Germany	Modification of reinforcing materials for rubber articles	Radusch Hans-Joachim, professor, Gesauer Str., Halle-Wittenberg, D-06099 Halle(Saale), Germany	since 2002
Technical University of Szczecin, Institute of Material Engineering, Szczecin, Poland	Chemical and physical modification of polymers	Tartakowski Zenon, professor, al. Piastow č. 19, Szczecin, Poland	since 1996
Clinica Puerta de Hierro, Cirugia Exoerimental, Madrin, Spain	Chemical modification and biocompatibility, testing of collagen membranes.	Herrero Eduardo, doctor, Hospital Puerto de Hierro, Madrid, Spain	since 1996
Institute of Macromoleculare Chemistry, Academy of Science of the Czech Republic, Prague, Czech Rep.	Polymer nanocomposites	Kelnar Ivan, senior research fellow, Academy of Science, Praque, Czech Republic	since 2001
International Clinic for Neo-Organs, Roma, Italy	Biomaterials development.	Letič Gavrilovič Anka, professor, International Clinic for Neo-Organs, Roma, Italy	since 1999
The Manchester Metropolitan University, Faculty of Science and Engineering, Manchester, UK	Reactive processing of particulate polymer composites.	Liauw C.M., senior research fellow, Chester str., Manchester M1 5GD, UK	since 1996
University of Minho, Department of Polymer Engineering, Guimarães, Portugal	Development of biomaterials, polymer processing.	Reis Rui, professor, University of Minho, Guimarães, Portugal	since 1999
University of Pisa, Department of Chemistry and Industrial Chemistry, Pisa, Italy	Biodegradable polymers	Chiellini Emo, professor, Via Risorgimento 35, 56126 Pisa, Italy	since 1999
Department of Macromolecular Science, Fudan University, Shanghai, China	New biomaterials based on chitosan complexes	Wei Zhong, associate professor, 220 Handan Road, Shanghai 200433, P.R. China	since 2002
Institute of Materials Technology, Poznań University of Technology, Poznań, Poland	Testing of adhesion properties of reinforcing materials to rubber	Szostak Marek, associate professor, ul. Piotrowo 3, 61-138 Poznań, Poland	since 2001

D. Membership in International Organisations and Societies

Name	Organisation or Society	Position	Valid date
Bakoš Dušan	European Biomaterial Society	member	1995 -
Špirk Eugen	Plasty a kaučuk	member	1990

E. Visitors from abroad

Name	Organisation or Institution	State	Date / Duration
Sybill Illisch	MLU Halle-Wittenberg	Deutsch-land	December 2004 (5 days)

F. Visits of Staff Members and Postgraduate Students in Foreign Institutions

Name	Organisation / Institution / Conference	State	Date / Duration
Jaššo, M.	Univ. Ghent	Belgium	Januar 2004 (5 days)
Hudec, I.	Konferencia, Nowe kierunki modyfikacji tworzyw sztucznych, Rydzyna	Polsko	May (4 days)
Černáková, Ľ.	Konferencia, Nowe kierunki modyfikacji tworzyw sztucznych, Rydzyna	Polsko	May (4 days)
Jaššo, M.	Konferencia, Nowe kierunki modyfikacji tworzyw sztucznych, Rydzyna	Polsko	May (4 days)
Hudec, I.	Konference IRC 2004 , Moscow	Russia	May-June (7 days)

Name	Organisation / Institution / Conference	State	Date / Duration
Khunová, V.	Vienna University of Technology Socrates exchange teachers mobility	Austria	June 2004 (10 days)
Khunová, V.	World Polymer Congress Macro 2004, Paris	France	July 2004 (7 days)
Jaššo, M.	Martin Luther Universität, Halle	Deutschland	July-Sept. 2004 (90 days)
Khunová, V.	World polymer congress MACRO 2004, Paris	France	July 2004 (5 days)
Černáková, L.	HAKONE IX Ninth International Symposium on High Pressure, Low Temperature Plasma Chemistry, Padova	Italy	August (5 days)
Simigová, E.	Junior Euromat 2004, Lausanne	Switzerland	September 2004 (5 days)
Šimková, B.	Junior Euromat 2004, Lausanne	Switzerland	September 2004 (5 days)
Kramárová, Z.	Junior Euromat 2004, Lausanne	Switzerland	September 2004 (5 days)
Khunová, V.	Global Symposium on Recycling, Waste Treatment and Clean Technology REWAS 2004, Madrid	Spain	September 2004 (7 days)
Alexy, P.	Conference Polymerwerkstoffe 2004 Halle/Salle	Deutschland	September-October (5 days)
Jaššo, M.	Conference Polymerwerkstoffe 2004 Halle/Salle	Deutschland	September-October (5 days)
Hudec, I.	Vel'rh Düsseldorf, K-2004, Int. Trade Fair	Deutschland	October 2004 (5 days)
Černáková, L.	Vel'rh Düsseldorf, K-2004, Int. Trade Fair	Deutschland	October 2004 (5 days)
Alexy, P.	Vel'rh Düsseldorf, K-2004, Int. Trade Fair	Deutschland	October 2004 (5 days)
Jaššo, M.	Vel'rh Düsseldorf, K-2004, Int. Trade Fair	Deutschland	October 2004 (5 days)
Kramárová, Z.	Vel'rh Düsseldorf, K-2004, Int. Trade Fair	Deutschland	October 2004 (5 days)
Šimková, B.	Vel'rh Düsseldorf, K-2004, Int. Trade Fair	Deutschland	October 2004 (5 days)
Hanzelová, S.	Vel'rh Düsseldorf, K-2004, Int. Trade Fair	Deutschland	October 2004 (5 days)
Hudec, I.	Conference Kautschuk-Herbst Kolloquium 2004, Hannover	Deutschland	November (7 days)
Krump, H.	Conference Kautschuk-Herbst Kolloquium 2004, Hannover	Deutschland	November (7 days)

VII. THESES AND DISSERTATIONS

A. Graduate Theses (Bc Degree) for state examinations after three years of study

Name	Title of Thesis	Supervisor
Amir Ihssan	Surface plasm-chemistry modification of steel reinforcing materials for tire construction	Jaššo, M.
Plachý, J.	Study of influence of natural fillers on properties of rubber blends	Alexy, P.
Szabová, R.	Plasm-chemistry modification of textile materials for tire constructions	Krump, H.

B. Graduate Theses (MS Degree) for state examinations after five years of study

Name	Title of Thesis	Supervisor
Baránková A.	Rubber blends with magnetic fillers for intelligent tires	Hudec, I.
Bellušová, D.	Surface treatment of reinforcing materials by atmospheric pressure plasma	Hudec, I.
Bugaj, P.	Influence of fillers from renewable resources on properties of rubber blends	Alexy, I.
Feranc, J.	Influence of lignin on properties of rubber blends	Alexy, P.

Name	Title of Thesis	Supervisor
Horčíková, M.	Study of complexation of natural polymer for development of resortable scaffolds	Bakoš, D.
Hornáčková, J.	Influence of modification on the structure and properties of polymer nanocomposites based on polypropylene	Khunová, V.
Kacko B.	Modification of dynamic-mechanical properties of mixtures for runners	Špírk, E.
Pindjaková, E.	Thermal degradation of environmental degradable plastics	Chodák, I.
Ryba, J.	Adjustment of properties of polymer-based microcapsules for immobilization	Lacík, I.
Saková, J.	Study of processing properties of polyvinylalcohol blends	Alexy, P.
Sztrecsková, M.	Phthalate analysis in softened polyvinylchloride	Černáková, L..

C. Dissertations (PhD)

Name	Title of Thesis	Supervisor
Bugaj, P.	Biodegradable polymer packaging materials	Alexy, P.
Bellušová, D.	Rubber blends for intelligent tire	Kyselá, G.
Feranc, J.	Application of multicomponent fillers in rubber blends	Alexy, P.
Hanzelová, S.	Structure and properties of complex biomaterials for tissue engineering	Bakoš, D.
Jaššo, M.	Influence of plasma treatment on the properties of reinforcing materials for tire construction	Hudec, I.
Kramárová, Z.	Utilisation of biopolymers as fillers in rubber blends	Špírk, E.
Kukolíková, L.	Biomaterials based on polyelectrolyte complexes focused on chitosan and glycosamino-glycanes	Bakoš, D.
Lukáč, P.	New packing materials based on nanocomposites	Bakoš, D.
Šimigová, E.	High - loaded composite materials with magnetic active filler	Hudec, I.
Šimková, B.	The study of processing properties of polyvinyl alcohol blends	Bakoš, D.
Štechová, K.	Modification of polymer surfaces using plasma	Bakoš, D.
Vodná, L.	Development of biodegradable capsules for the controlled release of bioactive substances	Bakoš, D.

E. Habilitation Theses

Name	Title of Thesis	Head of board
Alexy, P.	Processing and Properties of Biodegradable Polymers and Polymer Blends	Bakoš, D.

VIII. PUBLICATIONS

Books, Chapters in monographs

- [1] Bakoš, D., Berkeš, D., Biskupič, S., Čertík, M., Dvoran, J., Izakovič, M., Kovařík, P., Mierka, O., Ondrejčovičová, I., Šajbidor, J.: Information technologies in education. In: Nové trendy v chémii. Vydavateľstvo STU, Bratislava, 17-22 (2004). ISBN 80-227-2026-0

CC publications

- [1] Alexy, P., Košíková, B., Crkoňová, G., Gregorová, A., Martiš, P. Modification of Lignin-polyethylene blends with high lignin content using ethylene-vinylacetate copolymer as modifier *Journal of applied polymer science*, 94, 1855-1960 (2004).
- [2] Alexy, P., Lacík, I., Šimková, B., Bakoš, D., Prónayová, N., Liptaj, T., Hanzelová, S., Várošová, M.: Effect of melt processing on thermo-mechanical degradation of poly(vinyl alcohol)s *Polymer Degradation and Stability* 85, 823-830 (2004)
- [3] Krištofič, M., Alexy, P., Karabcová, N. Optimisation of properties of ternary co-polyamides based on ε-caprolaktam *Fibres and textiles in eastern europe*, 12 (2), 12-16 (2004).
- [4] Krump, H., Hudec, I., Jaššo, M., Dayss, E., Crimmann, P. Surface modification of PET by two different types of Plasma reactors *Kautschuk Gummi Kunststoffe*, 57, No 12, 662-667 (2004)
- [5] Šimor, M., Krump, H., Hudec, I., Ráhel, J., Brablec, A., Černák, M. Atmospheric pressure H₂O plasma treatment of polyester cord threads *Acta Physica Slovaca*, 54, No. 1, p. 43-48, (2004).

Other publications

- [1] Tomková, S., Payer, J., Killinger, Z., Alexy, P.: Androgenne status of patients with osteoporosis *Osteologický bulletin*, 9 (3), 75 - 77 (2004).
- [2] Struhářová, V., Hudec, I. New era of plastics *Plastics in our houseold*, No 3, 104-110 (2004)

Lectures and posters

- [1] Janyška, P., Šuriová, V., Hudec, I., Krump, H., Černák, M., Mičúch, M. The new progress in the surface treatment of reinforcing materials for rubber industry In: *Tire technology 2004*, Stuttgart, 23-25 March 2004

Text books

- [1] Alexy, P*, Šimková, B., Bakoš, D., Saková, J., Fuleová, V., Jakubcová, L., Lacík, I.: Processing of PVA Blends. In: *Proceed. Conf. Properties, Processing, Modification, Application of Polymeric Materials*, 29. Sept. – 01. Oct. 2004, Halle/Saale, p. B03 (2 pages), ISBN 3-928466-68-2.
- [2] Bakoš, D.*, Kukolíková, L., Hanzelová, S., Alexy, P.: Optimization of Scaffold based on Biopolymer Complexes. In: *Materials Processing for Properties and Performance (MP3)*, Volume 3, (Eds. Khor K.A., Ramanujan R.V., Ooi C.P., Zhao J.), Singapore 2004, pp. 298-304.
- [3] Černáková, L., Chrástová, V., Volfová, P. The Properties of functionalized polystyrene/poly(butyl acrylate) films In: *Nowe kierunki modyfikacji i zastosowan tworzyw sztucznych*, May 24-26, 2004, Poznań, Pofsko, p. 1-5, (2004). ISBN: 83-7143-232-1 (Pr).
- [4] Černáková, L., Kováčik, D., Mikulášová, M., Mikula, M., Buček, A., Černák, M. Low-cost Plasma Activation and Chitosan immobilization onto Polypropylene nonwovens In: *Proceedings of 14th Annual International TANDEC Nonwovens Conference*, November 9-11, 2004, Knoxville, Tennessee, USA, on CD p. 2.6-1 - 2.6-8 (2004).
- [5] Khunová, V., Snauko, M., Liauw, C.M.: Reactive compatibilisation of post consumer plastics waste In: *REVAS 04, Global Symposium on Recycling, Waste Treatment and Clean Technology*, Madrid, September 26-29, 2004, Vol.-II, p. 1751- 1760, (2004). ISBN 84-95520-05-2.
- [6] Khunová, V., Liauw, C.M., Kelnar, I.: Intercalant - reactive modifier interactions in polypropylene based layered silicate nanocomposites In: *World polymer congress MACRO 2004*, July 4-9, 2004, Paris, France, p. 1-8 on CD.
- [7] Kramářová, Z., Ambrovič, P., Alexy, P., Hudec, I., Špírk, E., Bugaj, P., Chodák, I.: Influence of modified starch on properties of rubber blends In: *The 16th International Slovak Rubber Conference SRC 2004*, 19-20 May, Púchov, Slovakia Proceedings, p. 57, (2004), ISBN 80-8075-020-3. (Po).
- [8] Černáková, L.*, Kováčik, D., Mikula, M., Černák, M., Špírková, M.: Chitosan immobilization onto the atmospheric - pressure plasma functionalized polypropylene nonwoven fabrics In: *HAKONE IX Ninth International Symposium on High Pressure, Low Temperature Plasma Chemistry*, August 23-27, 2004, Padova, Italy, on CD, 5 strán. (Pr).
- [9] Gregorová, A., Košíková, B., Alexy, P., Feranc, J., Ďuračka, M. Rheological properties of styrene-butadien rubber blends filled with lignin In: *The 16th International Slovak Rubber Conference SRC 2004*, 19-20 May, Púchov, Slovakia Proceedings, p. 17, ISBN 80-8075-020-3. (Pr).
- [10] Jaššo, M., Hudec, I., Amir, I., Kováčik, D., Šíra, M., Janyška, P. Study of Plasma Influence to Adhesion Improvement on Rubber/Textile Cord Interface In: *The 16th International Slovak Rubber Conference SRC*, 2004 19-20 May, Púchov, Slovakia Proceedings, p. 25, (2004). ISBN 80-8075-020-3 (Pr).
- [11] Jaššo, M., Hudec, I., Kováčik, D., Šíra, M. Plasma grafting and polymerisation - method for adhesion improvement of polyester cord to rubber In: *Nowe kierunki modyfikacji i zastosowan tworzyw sztucznych*, Poznań, p. 14-18, (2004). ISBN 83-7143-232-1 (Pr).
- [12] Khunová, V. The Role of Reactive Modifiers on Structure Development of Polymer Nanocomposites In: *NanoPol 04*, Smolenice, December 13-14, p. 36-38 (2004).
- [13] Kyselá, G.: Phosphoric Accelerators and their Influence on the Cross Links Structure in Sulphur Vulcanizates of Natural Rubber In: *The 16th International Slovak Rubber Conference SRC 2004*, 19-20 May, Púchov, Slovakia Proceedings, p. 41-42, (2004). ISBN 80-8075-020-3 (Pr).
- [14] Plevák, Z., Vajdová, J., Špírk, E., Moravčík, R. Optimalisation of the time of silanisation in rubber blends In: *The 16th International Slovak Rubber Conference SRC 2004*, 19-20 May, Púchov, Slovakia Proceedings, p. 55, (2004). ISBN 80-8075-020-3.
- [15] Simigová, E., Hudec, I., Dosoudil, R., Šuri, P., Baránková, A. Rubber blends with magnetic fillers In: *The 16th International Slovak Rubber Conference SRC 2004*, 19-20 May, Púchov, Slovakia Proceedings, p. 58, (2004). ISBN 80-8075-020-3 (Po).
- [16] Hudec, I., Jaššo, M., Černák, M., Krump, H., Dayss, E., Šuriová, V. Plasma treatment and polymerization - method for adhesion improvement of textile cord to rubber *Kautschuk-Herbst-Kolloquium 2004*, Hannover, 10.-13.november 2004, 317-324 (PPr)
- [17] Krump, H., Hudec, I., Jaššo, M., Dayss, E., Crimmann, P. Physical-morphological changes leading to an increase in adhesion between plasma treated polyester fibres and rubber matrix In: *Kautschuk-Herbst-Kolloquium 2004*, Hannover, 10.-13. November 2004, s. 325-333 (PPr)
- [18] Markovičová, L., Chalupová, M., Simigová, E. The character of fracture surface of magnetic composite materials with polymeric matrix In: *SeEMDOK 2004*, 9th International of PhD students seminar, Žilina-Súľov, 21 - 22 January 2004, p. 83-88 (Pr)
- [19] Bujnová, A. *, Koprda, V., Kukolíková, L., Bakoš, D.: Penetration of Ions through Skin Substitutes. In: *56. Zjazd chemických spoločností*, Ostrava, (Czech Republic), 6.-9. Sept., (2004), *Chem.Listy SAC* 98 (8) 662-663 (2004). (Po)
- [20] Černák, M., Černáková, L., Stáhel, P., Kováčik, D., Buček, A., Slaviček, P. Novel Atmospheric-Pressure Plasma Sources for on-line Plasma Activation, Polymerization and Plasma-induced Grafting of Web materials In: *COST International Workshop on Plasma Polymers and Related Materials*, October 7-9, 2004, Antalya, Turkey, p.6, (2004).

- [21] Gregorová, A., Košíková, B., Alexy, P., Ďuračka, M. Possibility of thermo-oxidative stabilization of SBR blends by using lignin as a natural filler In: International rubber conference IRC 04, 1-4- June, 2004, Russia, Moscow, Abstract of papers, p. 282 (2004). (Po).
- [22] Jaško, M., Hudec, I., Kováčik, D., Dayss, E. Study of plasma modification properties of PET reinforcing materials In: 11. International Conference Polymeric Materials 2004, September 29 - October 1, 2004, Halle/Salle, p.PI- 41, (2004).ISBN 3-928466-68-2 (Po).
- [23] Jaško, M., Kováčik, D., Hudec, I., Krump, H., Štahel, P., Sláviček, P. Surface modification of polyester reinforced materials by plasma polymerization In: Workshop on Cold Atmospheric Pressure Plasmas: Source and Applications, Ghent, January 14-16, 2004, p. 112 (Po), ISBN 9-08-086691-1
- [24] Bakoš, D., Kukulíková, L., Hanzelová, S., Alexy, P.: Optimization of Scaffolds Based on Polyelectrolyte Complexes. In: Programme Booklet of 43rd Microsymposium of P.M.M. „Polymer Biomaterials: Biomimetic and Bioanalogous Systems, Prague, 11-15 July 2004. Alexy, P., Kramárová, Z., Chodák, I., Hudec, I., Špírk, E., Bugaj, P. Influence of native and modified starch on properties of rubber blends and vulcanisates In: International rubber conference IRC 04, 1-4- June, 2004, Russia, Moscow, Abstract of papers, p. 273 (2004). (Pr).
- [25] Hudec, I., Jaško, M., Kováčik, D., Radusch, H.J., Janyпка, P. Study of plasma influence to adhesion improvement on rubber/textile cord interface In: 11. International Conference Polymeric Materials 2004, September 29 - October 1, 2004, Halle/Salle, p. B06, (2004). ISBN 3-928466-68-2 (Pr).
- [26] Hudec, I., Jaško, M., Krump, H., Černák, M., Janyпка, P., Šuriová, V. Surface treatment of reinforcing materials by atmospheric-pressure plasma In: International rubber conference IRC 04, 1-4 June, 2004, Moscow, p. 28 (2004) (Pr).
- [27] Julinová, M.*, Hoffmann, J., Bakoš, D.: Biologická rozložiteľnosť smesi polyvinylalkoholu a modifikovaných prírodných polymeru. In: 56. Sjezd Chemických spoločností. Ostrava (CZ). 6. – 9.9. 2004, 7L – 18 (Pr).
- [28] Šoltés, L. *, Stankovská, M., Lath, D., Vikartovská, A., Gemeiner, P., Kogan, G., Bakoš, D.: High-molecular-weight Hyaluronan Degradation: Studies by Viscometry. In: 9th Interdisciplinary Slovak-Czech Toxicological Conference, Píla-Častá, Slovakia, September 15.-17., 2004, L45, p.61.
- [29] Špírk, E., Hudec, I., Bakoš, D. Research activities of Department of Plastics and Rubber in Chemistry, Technology and Application of Polymeric Materials in Industry In: Workshop 2004, Slovenská chémia v 3. tisícročí, Bratislava, 11. - 13. Február 2004, s. 80, ISBN 80-227-2023-2

Contracts

- [1] Alexy, P. Modifikácia plnív, zloženia a vlastností zmesí na výrobu športových plášťov ZoD 19/2004, Bratislava, december 2004, 44 s., objednávateľ: Matador, a.s. Púchov
- [2] Hudec, I. Nové typy materiálov pre monitorovanie deformačných charakteristík v bočnici plášťa ZoD 14/2004, Bratislava, december 2004, 82 s., objednávateľ: Matador, a.s. Púchov
- [3] Hudec, I. Textilné výstužné materiály pre konštrukciu plášťov a ich povrchová úprava plazmou ZoD 28/2004, Bratislava, december 2004, 83 s., objednávateľ: Matador, a.s. Púchov
- [4] Hudec, I., Alexy, P., Chodák, I. Modifikácia vlastností gumárenských zmesí modifikátormi a plnivami vrátane nanoplínv ZoD 13/2004, Bratislava, december 2004, 143 s., objednávateľ: Matador, a.s. Púchov
- [5] Hudec, I., Špírk, E. Ochranné systémy na báze recyklovanej gumy a nové modifikácie plastov, časť 1.2. ZoD 101/2004, Bratislava, december 2004, 45 s., objednávateľ: VÚSAPL, a.s. Nitra
- [6] Khunová, V. Vplyv spracovateľských podmienok a zloženia na vlastnosti nanokompozitov na báze polyolefinov ZoD 101/2004, Bratislava, december 2004, 51s., objednávateľ: VÚSAPL, a.s. Nitra
- [7] Špírk, E. Modifikácia jazdných vlastností športových plášťov, časť I. Analýza vzťahov medzi hustotou a typom vulkanizačnej siete a DMV behúňových zmesí ZoD 19/2004, Bratislava, jún 2004, 60 s., objednávateľ Matador, a.s. Púchov

Patents, licence, know how

- [1] Chrástová, V., Černáková, L., Nováková-Volfová P. Mode of production of crosslinked polystyrene-poly(butyl acrylate) dispersion with core-shell particles Patent SR 284 001 (udelený 7.7.2004).
- [2] Janyпка, P., Reksová, V., Hudec, I., Krump, H., Černák, M., Šimor, M., Ráhel, J. Type of surface treatment of reinforcing materials. Patent SK 284 236 (udelený 3.11.2004).

Others

- [1] Bakoš, D.: Biopolymers in Tissue Engineering. In: Shanghai, Fudan University, May 2004.
- [2] Bakoš, D.: Development of sound solid waste management introducing sustainable polymers on the national level. In: Trieste, ICS-UNIDO Meeting, December 2004.

CENTRAL LABORATORIES

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Assoc.Prof. Ján Lokaj, PhD.

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Full Professors:

Associate Professors:
Ján Lokaj, PhD; Tibor Liptaj, PhD;

Assistant Professors :

Research Fellows:
Tibor Jakubík, PhD;

PhD Students:

Technical staff:

Ladislav Bačiak; Vladimír Dobiš; Michal Kaliňák; Svatava Kašparová; Lenka Kukulíková; Mária Mravcová; Eva Pappová; Naďa Prónayová; Miroslav Srbecký; Jozef Švorec; Walter Weis

II. TEACHING AND RESEARCH LABORATORIES

A. Teaching laboratories:

B.		Research		laboratories:
Laboratory	of	NMR	Spectroscopy	(NMR)
Laboratory	of	Mass	Spectrometry	(MS)
Laboratory of X-Ray Microanalysis				

III. TEACHING

IV. CURRENT RESEARCH PROJECTS

Development of NMR techniques for the structure determination of modular molecules (Tibor Liptaj)

The main goals of the project are: Development of the NMR techniques which provide long-range structural information on the studied molecules. These methods rely on measurement and interpretation of residual dipolar coupling constants which appear in high resolution spectra because of partial orientation of molecules. The main results are:

- development of the methods for the precise determination of the value of coupling constants
- determination of the dipolar 1H-1H and 1H-13C coupling constants in the model oligosaccharide.
- structural and dynamic interpretation of the experimental dipolar couplings

Project duration: from 2002 to 2004

High Resolution Solution Structures of Carbohydrates by NMR Spectroscopy. (NATO COLLABORATIVE LINKAGE GRANT PST.CLG.979696)

Uhrín Dušan, Dr., The University of Edinburgh, School of Chemistry, West Mains Road, King's Buildings, Edinburgh EH9 3JJ, U.K.
NMR spectroscopy, high-resolution solution structure, dipolar couplings, liquid crystalline media, carbohydrates, monosaccharide, oligosaccharide, conformation, ab initio calculations
Determination of high-resolution solution structures of monosaccharides. The aim is achieved by the analysis of small residual dipolar coupling constants measured in dilute liquid crystalline media. Different types of dipolar coupling constants, such as nDH , $1DCH$, $2DCH$, and $1DCC$, are measured using new NMR techniques recently developed in our laboratories. The accuracy and very high precision of these techniques will allow us to use NMR approaches developed previously for the analysis of molecular structures in nematic liquid crystals. For flexible monosaccharides, conformation of the glycosidic linkage will be investigated. Experimental solution structures will be compared with their solid state equivalents known from diffraction studies. The developed methodology for high-resolution structure determination of small molecules by NMR spectroscopy in dilute liquid crystalline media will be applicable to a variety of small molecules, not only carbohydrates.

Project duration: from 2003 to 2005

State program of research and science development, Project: Establishment of the "top-class" laboratory for Nuclear Magnetic Resonance (Tibor Liptaj)

Establishment of national NMR laboratory consisting of the group of 5 specialized NMR labs with the aim to initiate the exploitation and development of NMR methods in the broad area of natural science research and education.

Project duration: from 2003 to 2010

V. CURRENT EDUCATION PROJECTS

VI. COOPERATION

A. Cooperation in Slovakia

Institution	Type of cooperation	Responsible person	Duration
Jessenius Faculty of Medicine Martin	grant, publications	Prof. MUDr. Dušan Dobrota, DrSc.	2003 - 2005
Institute of Preventive and Clinical Medicine, Bratislava	publications	Doc. MUDr. J. Horecký, PhD.	continuous
Pharmacobiochem. Lab., Medical Faculty, Comenius University Bratislava	publications	MUDr. A. Gvozdjaková, PhD RNDr. Z. Sumbalová	continuous
Slovak Academy Sciences, Chemical Institute Bratislava	state program 339/2003	Ing. Miloš Hricovíni, PhD	2003 - 2006
Comenius University, Faculty of Natural Sciences, Bratislava	state program 339/2003	RNDr. E. Solčaniová, PhD	2003 - 2006
Derer Hospital, Bratislava	state program 339/2003	Ing. V. Mlynárik, DrSc.	2003 - 2006
Faculty of Natural Sciences UPJŠ, Košice	state program 339/2003	Doc. RNDr. J. Imrich, PhD	2003 - 2006
Comenius University, Faculty of Pharmacy, Bratislava	publications	Ing. J. Světlík, PhD. Ing. V. Kettmann, DrSc.	continuous
Research Institute of Animal Production, Nitra	ZoD, publications	Ing. R. Lahučký, PhD.	continuous
Slovnaft Bratislava	ZoD	Ing. A. Malíková	continuous
Duslo Šaľa	ZoD	Ing. J. Uhlár, PhD Ing. J. Balko, PhD	continuous
Institute of Polymers, Slovak Academy Sciences	publications	Ing. Š. Chmela, PhD.	continuous
Research Institute Soil Sciences and Conservation, Prešov	ZoD, publications	RNDr. G. Barančíková, PhD	continuous

B. International Cooperation

Institution	Type of cooperation	Responsible person	Duration
University of Edinburg, Chemistry Dep., UK	grant	Prof. D. Uhrín, PhD.	2003 - 2005

C. Membership in Domestic Organizations and Societies

Name	Organisation or Society	Position	Valid date
T. Liptaj	Slovak Spectroscopic Society	member	
T. Liptaj	Slovak Chemical Society	member	

VIII. PUBLICATIONS

CC publications

- [1] Alexy, P., Lacík I., Šimková B., Bakoš D., Prónayová N., Liptaj T., Hanzelová S., Várošová M. Effect of melt processing on thermo-mechanical degradation of poly(vinyl alcohol)s *Polymer Degradation and Stability* 85, 823-830 (2004)
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